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Brown County Paper Mills Formed at DePere

Incorporators Include H. H. Miller, Formerly Treasurer and General Manager, and J. I. Reis, Formerly Secretary, of DePere Paper Manufacturing Co., and S. D. Clark—Organization of Company to Engage In Manufacture of Paper Will Be Completed Shortly and Building Plans Formulated—Former Mill Was Two Machine Plant

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 8, 1932—A new corporation to engage in the manufacture of paper has been formed at DePere, Wis. It will be known as the Brown County Paper Mills, Inc., with a capitalization of 500 shares of common stock without nominal value, and 250 shares of preferred stock at $100. The incorporators are J. I. Reis, S. D. Clark and H. H. Miller. Two of these formerly were with the DePere Paper Manufacturing Company, of DePere, whose mill burned down more than a year ago. Mr. Miller was treasurer and general manager and Mr. Reis was secretary. Plans had been going forward to reorganize the company and rebuild the mill. Organization of the company is to be completed at an early date, after which building plans will be formulated. The former mill was a two machine plant making heavy wrappings, car linings, chip board, document, tag and cheese manila, drawing and dry and water finished screenings. Its capacity was 50 tons daily.

Paper Manufacturers Address Labor Institute

Two Wisconsin paper manufacturers, George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids; and J. M. Conway, president and general manager of the Hoberg Paper and Fibre Company, Green Bay, were speakers at the annual labor institute at Madison, Wis., last week, sponsored by the summer school of the University of Wisconsin.

Mr. Mead's address to representatives of labor dealt with a plea for good will between labor and managers of industry. Referring to the business depression, he declared that unless a better understanding is reached between the employee and the employer, "we will all perish together."

"Certainly with our absence of knowledge as to a rapid solution of present day problems, we cannot afford to recognize or tolerate intolerance," said Mr. Mead. "We need the help and co-operation of every business factor—every group."

Labor and capital are interdependent and at the present time there is a great mutuality of interests among all classes, Mr. Mead declared. Labor should not be too ready to condemn capital; thinking should supplant prejudice.

Mr. Conway led one of the discussion groups dealing with the welfare of the workers in industry. His plant is considered a model of harmonious relationships, and methods and policies used there were explained to those attending the institute.

Pulpwood for Consolidated Mills

The second raft of logs to be towed across Lake Superior from Black Sturgeon Bay, Canada, reached the Consolidated Water Power and Paper company's loading dock at Ashland, Wis., last week. It was brought over by the company's tug *Butterfield* in record time. The raft contained 8,000 cords of pulpwood, to be reloaded on cars for distribution to Consolidated mills. The company may bring one more raft across, but it was expected this would be the last. Twenty-five men are employed on the loading hoist.

News of the Industry

A force of 5,226 men has been at work under direction of the Wisconsin Conservation Commission this summer building roads, cutting fire lanes and erecting lookout towers in an effort to improve fire detection and prevention in Wisconsin forests. They were scattered over twenty-four counties in this work. The legislature appropriated $500,000 for this work as an emergency employment move and the results will be a vastly improved situation in eliminating the vast annual losses of timber caused by forest fires.

Fire damage of approximately $1,000 was caused at the Hoberg Paper and Fibre Company's mill at Green Bay, Wis. Excessive heat from a sulphur burner, or a spark, ignited a wooden ventilating cupola. Sulphur in storage also caught and made a stubborn fire for the mill firemen and the city fire department to extinguish. Part of the roof was burned. There was no interruption of production, except for employees who left their machines to help extinguish the blaze.

"A tremendous reaction with a new business and social life, a new religion, and a new philosophy will be the result of the present depression," declared W. J. Pea-

(Continued on page 22)

Pennsylvania Paper Mills Speed Production

Manufacturers Operate On Four to Five Day Schedule Since Opening of August, With Better Orders Accumulating—Fine Paper Mill Representatives Experience Improved Demand for Book Papers, Bonds and Covers, and Other Lines

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., August 8, 1932.—With the break in the prices of kraft and bags within the past week the Philadelphia trade has been looking forward to stimulated buying of these grades, which have been moving slowly since the rise last January. Though dealers do not welcome the present disturbed market which resulted from the reduction of prices a few days back, they are assured by consumers that more interest will be shown in stocking of kraft at present values for the coming season's needs.

On the other hand, the bag merchants, who recently organized to stabilize the bag situation, long a disturbing factor in the Quaker City industry, are perturbed over the announcement by large manufacturers that prices have been adjusted downward. It required much effort on the part of the leaders of the paper jobbing movement to assemble the local trade associates into an organization to stabilize the bag industry. Under the present drastic cutting of prices they find themselves in a quandary as to how to proceed to bring back the firmness of the past few months without the co-operation of the manufacturers, who assured the group constituting the Philadelphia Paper and Bag Institute that they were solidly behind them to promote stabilization. It is the intention of the Institute to take up this problem at its next meeting with a view to proper adjustment of the disturbing price situation.

Mill agents representing fine paper manufacturers report that they are experiencing a broadening of demand for book papers, bonds and covers, and other lines consumed in direct mail advertising as the coming business revival for Fall is anticipated and wider advertising is promoted. There is a fair demand for social stationery and card stocks. Box makers' supplies show a slight advance in demand. Paper manufacturers are on a four to five day week of operation with the opening of August and find slightly better orders accumulating though normal trend is not noted.

Paper and Bag Institute to Discuss Stabilization

With the meeting of the Paper and Bag Institute of Philadelphia to be held on August 17 at the Elks Club, the group of paper jobbers will take up plans for stabilization of business for the Fall season with a view to adjustment of the present disturbance brought about by the drastic cutting of prices of bags. The Institute has spent an entire half year endeavoring to bring about a steadier bag market through organized effort after several years of unprofitable trading in bags in the Quaker City industry and after several attempts had been made to organize the trade throughout the post war years. Now that similar disturbing factors have entered into the bag situation again the group will take measures to adjust difficulties before Fall business sets in and will request co-operation of the bag manufacturers. President Nathan D. Isen will preside. The outing program will also be discussed, as the group anticipates a gala social event in the first of the annual affairs of this kind which will be inaugurated this month.

Special Election of Garrett-Buchanan Officers

With the resignation of D. L. Cowan from the official staff of the Garrett-Bauchanan Company, 12-20 South 6th street, there was held a special meeting of the officers and directors to elect other officials and a successor to the secretary. The meeting was held on July 26 at headquarters, when the following were elected:—Joseph H. Miller, head of the Writing Paper Department, vice-president: Frank H. Seltzer, secretary; and Harvey Van Aken, auditor of the company, assistant secretary. Mr. Seltzer succeeds Mr. Cowan, who still maintains a stockholding interest in the Company. Mr. Cowan is the son-in-law of the late John H. Sinex, head of the company at the time of his death and for many years its president. The Garrett-Buchanan Company is one of the oldest paper distribution concerns in this section. The present president of the company, Morgan H. Thomas, is on a motor tour through New England and will spend several weeks along the coast of Maine.

Joseph H. Diehl With Garrett-Buchanan Co.

Joseph Diehl, for many years connected with the Lindsay Paper Company, recently dissolved following the death of the late head, J. Horace Lindsay, has joined the staff of the Garrett-Buchanan Company, which purchased $20.-000 worth of paper stocks in the liquidation of the Lindsay Company. Mr. Diehl will cover the city trade for the Garrett-Buchanan Company.

Paper Trade Association to Meet

The Philadelphia Paper Trade Association will hold its August meeting on the 10th of the month at DuFours Restaurant in 4th street. It is expected that executives of the National Paper Trade Association will be present.

S. Walter, Inc., Distributor for Continental Paper

S. Walter, Inc., 144 North 5th street, one of the most prominent wrapping paper and specialty houses in the Quaker City industry, with branches at York and Allentown, Pa., has become distributor of the Continental Paper Company's boards, manufactured at the extensive mills in Ridgefield, N. J. With the opening of the paper board department at the Walter headquarters, Allen G. Center, who has been manager of the Philadelphia offices of the Continental Company, in the Terminal Commerce Building, becomes head of the Board Division. The former mill offices in the Terminal Building will be closed with the acquisition of the mill agency by the Walter company. The newly appointed mill agents will cover Eastern and Central Pennsylvania, Southern New Jersey, Delaware and Eastern Shore territory. There has been added to the truck services of the Lehigh Valley Paper House Division of S. Walter Inc., located in Allentown, Pa., branch distribution center of the local Walter concern for the Lehigh Valley section, a new two-ton Mack, which will be used in delivery service for that territory.

Arthur Lewis to Manage Credit Bureau

Arthur Lewis, who has been associated with the law firm of Levinson & Haas, with offices in the North American Building, has been made manager of the newly inaugurated Credit Bureau of the Paper and Bag Institute which began functioning this month. He will continue with Levinson & Haas, making the offices in the North

American Building the headquarters of the Credit Bureau of the Institute. The firm of Levinson & Haas has been selected as legal advisers for the Institue.

Linville Mullin Recovering

Linville Mullin, chairman of the Pennsylvania, New Jersey and Delaware Division of the American Pulp and Paper Mill Superintendents Association, who suffered the loss of his thumb as a result of its being caught in the gear of the paper machine, which he was adjusting in the Augustine Mill of the Jessup & Moore Paper Company, in Wilmington, Del., a fortnight ago, is recovering from the accident and amputation operation. He is now able to be at home after several days in the hospital at Wilmington and to shortly resume his duties as assistant superintendent of the mill.

McDowell Paper Mills Broaden Glassine Output

With a growing demand for glassine papers in the advancing season, the McDowell Paper Mills in Manayunk have been placed on broader scale of operations. Charles McDowell, head of the firm, reports a fairly gratifying demand for glassines as greater confidence in the near future, develops among consumers. Mr. McDowell will shortly leave for a yachting trip to Bar Harbor and other Maine points.

American Paper Goods Co. Shows Envelopes

With a fine line of all kinds of envelopes, F. P. Kotzback has been making the tour of the Philadelphia territory on behalf of the American Paper Goods Company, Kensington, Conn. The offerings include special envelopes for all purposes, such as glassine, cellophane, bank and commercial and social stationery grades and others for special usage and of novel types.

Paper Mill Employment

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Aug. 4, 1932.—Employment and payrolls in the paper and pulp and paper box industries decreased in June as compared with May according to the Bureau of Labor Statistics, Department of Labor.

Reports were received by the Bureau from 419 paper and pulp mills which gave their June employment at 77,638 a decrease of 2.3 per cent from May and of 9.5 per cent from June of last year. The average weekly June payrolls in these same mills was $1,402,414 a decrease of 9 per cent from May and of 29.9 per cent from June of last year.

The Bureau also received reports from 313 paper box plants which gave their June employment at 20,113 an increase of 0.1 per cent over May but a decrease of 14.6 per cent as compared with June of last year. The average weekly June pay rolls in these plants were $365,963 a decrease of 1.3 per cent from May and of 27.6 per cent from June of last year.

Crystal Tissue Company Report

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, August 8, 1932.—The Crystal Tissue Company of Amanda, near Middletown, reports for the six months ended June 30, after charges, a net loss of $16,112, against a net profit of $46,439 in the corresponding period of 1931.

The sales for the period amounted to $49,986 against $737,141 in the same half year of the preceding twelve-month period.

As of June 30, current assets totaled $246,123 and current liabilities, $48,762.

Indianapolis Demand More Active

INDIANAPOLIS, Ind., August 8, 1932.—A little more activity is noticeable in the local paper market. Orders continue for small amounts, but there are inquiries that are indicative of more business to come. The fine paper market has suffered from seasonal influences, but by the middle of this month the opening of the school season should increase demand. The jobbers here say there is some nice business in sight, much of it from printers who are figuring on advertising campaigns. There can be no doubt of a more optimistic feeling on the part of paper users. It is felt and for no particular reason that the turn has been reached and business is on the up-grade.

The kraft and bag market is fairly well stabilized, with bags being in demand in really larger volumes than had been expected for this time of the year. The box manufacturers are working about fifty per cent of the time and report more inquiries than a month ago. It seems the inquiries are coming from a wider field than before, which lends encouragement to the trade. Prices, while low, seem well stabilized and every effort is being bent on keeping them so.

The container demand is picking up. Hot weather has created a good market for ice cream and similar containers and the volume this year will be fully equal to that of last. New markets for paper containers are being created steadily.

Right now all the summer specialties are going big. Paper napkins, plates and other items are finding a ready sale. There is no disposition on the part of dealers to carry large stocks, but they are reordering for small lots in a satisfactory manner.

The building paper demand also seems to be picking up. There was a lull in demand during July, but this month has seen a fair demand and it is felt fall will be good. The passage of the home loan bank act by congress in its closing days will stimulate construction. Paper stock continues to be dull, with low prices and mills taking only small quantities.

Corrugated Box Simplification

Simplified practice recommendation R128-31, covering corrugated boxes used by department and specialty stores for packing merchandise, is now available in printed form according to an announcement by the division of simplified practice of the Bureau of Standards.

This simplification program, which was proposed and developed by the industry, reduces 322 sizes of corrugated boxes formerly used by stores to a selected list of 75. The users and manufacturers expect to realize substantial savings by adhering to these standards.

Copies of the printed recommendation can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

For Printing on Cellophane

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, August 8, 1932.—Emil Lauszus, 321 Dorothy Lane, Dayton, has invented and applied for patents on a device to print labels on cellophane wrapping paper for manufactured and other articles.

Previously invented cellophane printing has been prohibitive in cost, according to Lauszus, who claims his machine will print in black or in colors economically. The printing, furthermore, may be simultaneous with the wrapping of the article.

The device has been built and perfected by the Johnson Tool and Engineering Company, 10 McDonough street.

Demand for Paper Increases Slightly In Boston

Volume of Wrapping Paper Business Transacted Grows—Competition for Desirable Orders, However, Is Intense, and Quotations Are Easier—Summer Specialties Continue In Seasonal Request—Fine Paper Campaign Brings Gratifying Results

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 8, 1932—Favorable reports from Boston merchants and from paper manufacturers in Massachusetts indicate increases in the volume of business in the last few weeks. Gains in the amount of orders, however slight, are encouraging. Cheerful reports from other industries, with advances in commodity prices and rises in the New York stock market all tend to continue the optimistic sentiment which has recently developed. At least a moderate volume of orders is being placed with a number of paper merchants. Returns from campaigns on fine papers are gratifying.

While a good demand for wrapping paper for the time of year prevails, competition is very keen, particularly on No. 2 kraft, which has been marked down still further. This grade is not quotable at .02⅝, f.o.b., mill, compared with 0.3¼ @ .03½ a week ago, which represented a quarter of a cent decline from the previous quotation. The call for summer specialties is maintained. In box papers there is possibly an improved demand. Box board prices are holding firm.

In paper stock, a greater supply of mixed ledgers has come on the market so that the price has declined drastically, from .90 @ 1.10 f.o.b. Boston, to .60 @ .70 f.o.b. Boston. Although markdowns have been made in some grades of paper stock, the outlook as a whole is more cheerful. No. 1 books, heavy, are quotable at .50 @ .60, compared with a previous range of .60 @ .70; No. 1 books, light, at .30, compared with .45; manila envelope cuttings at 1.25 @ 1.30, compared with 1.50 @ 1.60; No. 1 old manila at .55 @ .65, compared with .60 @ .70, and white blank news at 1.00 @ 1.10, compared with 1.10 @ 1.20. It is expected that the quantity of roofing rags will be lessened to some extent. The situation in this commodity is due to a movement in woolen rags. Some of the low grades of woolen rags have been put into the low roofing rags, but on account of a greater demand for woolen rags, undoubtedly occasioned by increased operation of woolen mills, they are now kept out of the roofing rags, according to a statement in the paper stock trade.

Wheelwright Receivership Continued

The receivership of the George W. Wheelwright Paper Company, of North Leominster and Wheelwright, Mass., is to be continued indefinitely, subject to order and the receivers are to continue the custom of filing quarterly reports, according to an order of Judge McLeod last week. Receivers Alpert, Woods and Wheelwright, of the George W. Wheelwright Paper Company, appeared before Judge McLeod in Suffolk Superior Court in this city to argue for a continuance of the receivership. The case has been in charge of Judge Lummus, recently elevated to the Supreme Court.

The North American Coal Corporation, of Boston, a creditor for $9,000-$10,000, urged, for the second time, that the assets of the Wheelwright company be liquidated. Counsel for the coal company argued that the company had lost money and that its position was getting worse. Receiver Alpert urged continuance, pointing out that the receivers had cut losses to a mere $17,000 on operations, compared to $150,000 in 1931 up to receivership and $100,000 in 1930. The receivers lost $17,000 on inventory liquidation which had nothing to do with operations. Their record was considered excellent. The bulk of the creditors supported Mr. Alpert's plea for continuance. They included the First National Bank, creditors for over $230,000; E. Butterworth, George M. Graves Company, P. H. Graham & Sons, J. J. Graham Paper Company, Merrimac Chemical Company, John Richardson Company, and the Gatti Paper Stock Company.

The Court did not favor liquidation and ordered the receivership continued. The company's total liabilities are over $700,000, of which $470,000 are deferred credits others current liabilities. The company actually made money in two of the past twelve months and can make money when gross volume of business exceeds $75,000. The receivers have been in negotiation with prominent paper manufacturers looking to an outright sale of the Wheelwright assets, but no agreement has been reached.

News of the Trade

Stimpson & Co. held a sales meeting Tuesday evening at the Hotel Manger, where members of the company and staff were guests of the Individual Drinking Cup Company, for whom the Boston firm is a distributor in this territory. After dinner very interesting talks were given by A. M. Flint, sales manager of the Individual Drinking Cup Company; A. R. Bennett, specialty manager on soda dixies, and C. L. Schreeder, specialty manager on package dixies. Mr. Flint presided for the Individual Drinking Cup Company, and Willard H. Loud and Warren L. Chace for Stimpson & Co. Twenty-four were present.

The James Flett Organization of Chicago made the initial collections of waste paper last week from twelve stores in this city, including the majority of the large department stores. The arrangement was negotiated by the Boston Retail Trade Board so that the waste paper accumulation of the stores might be sold to the organization. A considerable weight of paper each week will be taken away. It is understood that the stores began negotiations when waste paper prices fell to such a low level that its removal was accomplished only at an expense. It is reported that recently it cost all Boston stores at the rate of $19,000 a year for disposal of their waste paper. Under the present arrangement the waste is baled, sorted roughly, and shipped from the stores to mills, according to instructions. Collections were made by M. Doyle & Co. At least some of the paper was shipped to Bradford, Mass., where a mill of the Robert Gair Corporation is located.

R. S. Gilfoy, manager of the sales service department of Storrs & Bement Company, left Saturday for a two weeks' vacation in New Hampshire.

The July-August number of How, published by Tileston & Hollingsworth Company and edited by A. V. Howland, contains up-to-the-minute articles for the printing trade, the first one of which is entitled, "Better Times Are Here." Analyses of the July and August sheets of the 1932 Tileston & Hollingsworth Calendar are published in this issue. The number is printed on Dorchester Plate white, with Milton Cover, blue. Samples of Dorchester Plate are attached to the inside back cover.

News Print Paper Outlook Clouded In Canada

Three Large Organizations Default Bond Interest, Including Abitibi Power & Paper Co., Lake St. John Pulp & Paper Co., and Price Bros. & Co., Ltd.—Latter Company Has Still Sixty Days Grace Before Bond Holders Can Take Possession

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 8, 1932—The unsatisfactory condition of the news print industry in Canada, about which little has been said within the past few weeks, was brought to light in unmistakable fashion by developments this week. Not only have three Canadian news print companies defaulted the interest on their bonds, but from the remarks of news print executives the outlook for the industry as a whole is clouded by uncertainties. Abitibi Power and Paper Company passed the interest due on the company's 5 per cent gold bonds and further postponed payment after the expiration of the sixty-day period of grace from June 1 to August 1. This week, according to press despatches from Montreal, Price Bros. & Co., Ltd., failed to pay the 6 per cent interest on the company's $11,061,600 first mortgage bonds outstanding, although this company has still sixty days in which to make good the default before the bondholders can take possession. The third member of the trio, Lake St. John Pulp and Paper Company, also failed to pay interest due August 1 on $4,880,000 6½ per cent first mortgage bonds outstanding, as well as passing payment on the 6½ per cent debentures, of which there are $2,849,000 outstanding. The fact that news print executives are uncertain as to the future was made known in the official statement of Abitibi directors in Toronto that payments on the company's bond interest are being postponed pending the final adjustment of the Ontario Power Service Corporation and "a clearer view of the immediate future of business and the news print industry in particular."

Crabtree On Paper Situation

The necessity for preserving the domestic paper market for Canadian pulp and paper mills is stressed by Harold Crabtree, president of the Howard Smith Paper Mills, and president of the Canadian Pulp and Paper Association, in a summary of the situation prevailing in the pulp and paper industry today in relation to the Imperial Economic Conference now in progress at Ottawa. "Whatever is done at Ottawa with respect to pulp and paper," says Mr. Crabtree, "must of necessity take into consideration the fact that our industry is one that is indigenous to this country and economically sound. The industry represents an investment of a vast amount of capital, and employs both in the forest and in its mills many thousands of workers, and any move that is made should have as its primary object the fostering and furthering of the industry generally to the great ultimate good of Canada. It may be said that the industry welcomes the opportunity and is desirous, in so far as it is possible, of promoting Empire trade. From a technical standpoint the industry in Canada is in a stronger position today than ever before.

During the past few years vast sums of money have been spent for research, and due to the efforts of the Dominion Government, McGill University, and the technical men of the industry, a foundation is being laid for the future expansion of the industry along sound economic lines. Of no less importance for its future welfare is the fact that a considerable number of technically trained young men are being developed to whom the industry must look for guidance in the coming years.

"At the same time, it must be borne in mind that the population of Canada is small and that, with the exception of news print, it is almost impossible for our paper mills to do any export business, so that their success depends almost entirely on the domestic market. It is, therefore, vitally important that our industry continue to be protected so that we may supply the greater part of our domestic demand. Otherwise the industry will fail to develop and the efforts of past years will have been in vain."

Notes and Jottings of the Trade

The Pigeon Timber Company, Ltd., Newaygo Timber Company, Great Lakes Pulp and Paper Company, the Abitibi Power and Paper Company, and the Hammermill Paper Company, Port Arthur, have published notice that anyone salvaging or found with salvage wood in their possession bearing their stamp or belonging to any of these companies, will be prosecuted to the fullest extent of the law.

Ernest Cotes, aged 27, an employee of the Thunder Bay Paper Company, at Port Arthur, was instantly killed when he was crushed between the reel drum and a roll of paper.

Appointment of Dr. James H. Ross as director of the pulp and paper division of the Forest Products Laboratories of Canada has been announced. He has been in charge of research work carried on at the institute in co-operation with the Canadian Pulp and Paper Association since 1930. Dr. Ross is a graduate of McGill University and a Doctor of Science of the University of Geneva.

George C. Winlow, also manager of the Alliance Paper Mills, head office Toronto, who has just returned from a business trip to the Canadian West, had a narrow escape from drowning when his speed boat upset at a Georgian Bay summer resort last week-end. Mr. Winlow was precipitated into the water and being completely clothed had great difficulty in swimming to shore.

Neill Powter, of the advertising department in Toronto of the Howard Smith Paper Mills, is spending his vacation at the old Powter camping grounds in Quebec.

George Pauline, managing director of the Alliance Paper Mills, Toronto, has returned from a holiday stay on Lake Windermere, Muskoka.

George W. Allen, of the Buntin-Reid Paper Company, Toronto, is spending his vacation with his family on the Muskoka Lakes.

Waviness in Paper

This little book is a reprint of several articles on the waviness of papers, prepared by experienced dealers in fine papers and originally published in Zellstoff und Papier. Reference is also made to a discussion of the same subject by the Technical Section of the British Paper Makers Association. Causes of and cures for waviness are rather fully treated. The majority of the writers are of the opinion that *hurry* is the root cause of the trouble. The points to be observed if one would hurry successfully are noted.—C. J. WEST.

Das Welligwerden von Feinpapier (Development of waviness in fine papers). Verlag von Zellstoff und Papier, Carl Hofmann GmbH., Berlin, 1932. 20 pages. Price, 75 pf.

Chicago Paper Market Exhibits Irregularity

Executives of Wrapping Paper Houses Express Disappointment Over Recent Break In Kraft Quotations After Practically Six Months Stabilization—Book and Cover Papers Moving Slowly Along—Paper Board Situation Unchanged

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 8, 1932—With evidences of stability and growing confidences rather plentiful in the Chicago area for the first time in many moons Chicago paper executives are prone to look with disappointment at the recent break in the kraft market after the stabilization of the market for a period of about six months. The uncertainty in this market has not spread, according to reports, to other markets although executives feel that the time was unfortunate for this inopportune break to come about. There is evidence pointing to the fact that the break cannot be too long continued or drastic because of the market situation in general.

Other Lines

Other paper lines are experiencing the summer doldrums but there is a word of optimism in the loop district and outlying points where a note of pessimism was formerly registered. This is due, in part, to the strengthening of commodity prices in general, to the improvement in the financial outlook and, for the most part to the fact that inquiries indicate that an awakening is about due. Sulphite bond representatives have their eyes and ears glued New York way this week as a two day meeting of manufacturers is being held. In other markets, ground woods and news prints are reported to be holding firm. Book and cover papers are moving slowly along. The board market has not yet begun to feel any appreciable improvement. But the sentiment is there—and this time the sentiment seems to be based on more actual facts than for some time past. And it is a sentiment for improvement.

Paper Board Men to Discuss Labor

With plans rapidly being completed for the September meeting of the Paperboard Industries Association at the Congress Hotel, September 20, 21 and 22, indications strongly point to the fact that the subject of employment of labor will be one of the most important discussed at that session. Widespread interest in the remarks made by President Schmidt at the eastern meeting in July and the fact that the association voted to list this subject for discussion at the September meeting seem to bear out the above conclusion.

At the July meeting Mr. Schmidt said that "today each of us and each of our friends should do all we can to improve the labor situation. A six-hour working day would employ many more than the twelve-hour day. A division of the work available should not lead to too great, or in fact to any, inefficiency. If we want to carry more workers on the pay roll, we can shorten the day to the number of hours which will give employment to that number of workers. It may be necessary to make labor readjustments but we should not go backwards in our treatment of labor."

This comment was enthusiastically received and resulted in the listing of the employment subject for consideration at the September Chicago meetings. At that time, too, J. M. Arndt, chairman of the important Container Group Sales Executives' Conference, will have a committee of four men to help him arrange this important part of each program. The executives are J. L. Barchard of Hummel & Downing Company; R. H. Bursch, Robert Gair Company, Inc.; R. H. Dollison, Fairmont Box Company, and J. H. Macleod of the Hinde & Dauch Paper Company.

Paper Salesmen's Activities

Although it's a little late to report it, owing to vacations, and even though Courtney Reeves is already making preparations for the semi-final golf event at Park Ridge on August 19, the Middle West Division of the Salesmen's Association of the Paper Industry deserves special comment for the success it is making with these monthly get-together events as exemplified by the July 22 afternoon's play over the Westmoreland Country Club course. Fifty salesmen and guests—a near record assemblage—sat down to an excellent luncheon, waded through eighteen holes of all kinds of golf and wound up the evening with a splendid fried chicken dinner with entertainment provided by Jim Coy and his leather lunged singing associates.

The ability of these salesmen to get their "feet under the same table", to promote mutual understanding through fellowship, is something that many a paper manufacturer and merchant might well consider and profit by through example. Getting back to the July 22 event those who merited prizes included Bob Harbison, of International, who played one of his best games to grab the low gross prize; Jack Hillyer, E. E. Brown, W. B. Moore, R. Moran, D. Frisbie, R. R. Shanley, E. E. Long, W. J. Tilden, Courtney Reeves and several others who were in the competition for blind bogeys, low putts, low putt foresomes, special prizes for the short holes and all the rest.

The monthly events this year have been unusually successful, partly due to the fine efforts of Courtney Reeves and partly due to the fact that the salesmen are boosting the events themselves as great promoters of better and more prosperous business tactics and perhaps mostly because everybody has such a darn good time.

New of the Trade

Westvaco Inspirations for Printers, Number 76 of the interesting series coming from the West Virginia Pulp and Paper Company, deals with the use of advertising to promote health. "The New Age of Color Photography", "Using the Colors of Life"; and "A Background of Ideas for the Product" are included in a series of splendid color and black and white illustrations showing many advertisements of national advertisers selling products designed to improve the health of the consumer. The cover illustrations, front and back, printed by Offset Lithography on Inspiration Offset, are by no means the least attractive features of this issue.

"One Million Times We Have Said," is the intriguing title of the current mailing of the Howard Paper Company describing Howard Bond through its Chicago distributors, the Midland Paper Company, Moser Paper Company and Parker, Thomas & Tucker Paper Company. The folder urges users to compare, tear and test Howard Bond and to pay special attention to the "matchless brilliant blue-white color, superior quality and uniformity."

TAPPI To Inspect Holyoke Paper Mills

Plans are progressing rapidly for the Fall Meeting of the Technical Association of the Pulp and Paper Industry to be held in Holyoke, Mass., Sept. 14, 15, and 16.

Committee meetings are being held regularly and rapid progress is being made. The general outline of the program has been determined and many interesting papers are scheduled to be read, not forgetting a fine recreation program that includes an old-fashioned New England clam bake, and two golf tournaments with beautiful trophies for the winners.

Paper Making in the Connecticut Valley

Without doubt the first paper making in the Connecticut Valley was in the Hudson & Goodwin mill at East Hartford, Conn., where in 1776 was equipped an old fulling mill to make paper for the Connecticut Courant, which they published. In later years this mill operated as the East Hartford Manufacturing Company. From this mill Samuel Church learned his trade and in 1806 established the paper industry in Lee, Mass., the business he started being still active as the Hurlbut Paper Company.

In 1798 Reuben Roberts, also from the East Hartford mill, established the paper business in Amherst, Mass., where it flourished until the early Eighties.

The industry in the Valley also spread to Manchester, Unionville, and Suffield, Conn.

The Ames Family

Springfield, Mass., early became famous as the center of the paper business, established by the Ames family, who in their day were the largest manufacturers of paper in the United States.

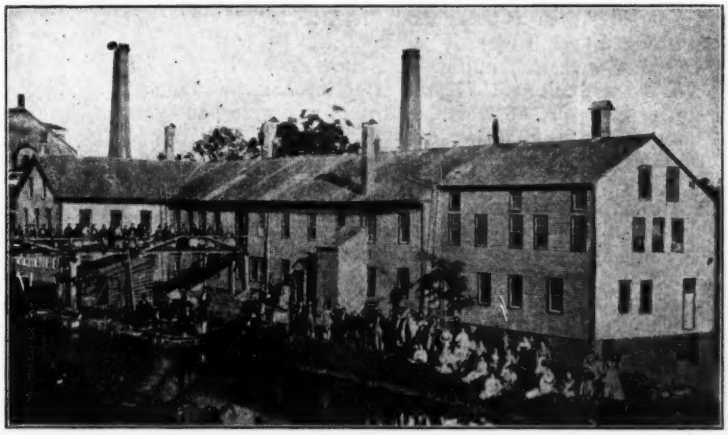
David Ames, a mechanic, was appointed in 1794 by George Washington to build and operate the U. S. Armories. He had worked as a mechanic in the first paper mill in Massachusetts, at Milton, where Zenas Crane originated and started the celebrated paper industry at Dalton in 1801.

About 1785 a man by the name of Patten, also from East Hartford, Conn., built in Springfield the first mill having two 120 pound beaters. This mill was not too successful and was sold in 1788 to Elisha Wright and to David Ames in 1800. He also became interested in the Eagle mill at Suffield, Conn. Later his sons David and John succeeded him, and the business grew rapidly. They built mills at Cabotville (now Chicopee), South Hadley Falls and Northhampton. John was an inventor, and one of the first to build a cylinder machine. Their entire business was lost in the Panic of 1837.

South Hadley Falls

In paper making, South Hadley Falls, just across the Connecticut River from Holyoke, anti-dates Holyoke. Here power was first developed by a wing dam and a canal built to let boats around the rapids. Here the D. & J. Ames and the Howard & Lathrop mills were established early in the past century.

In 1840 the Carew Manufacturing Company's mill was established by Joseph Carew, and the Hampshire Paper Company's mill was built in 1864 by the Glasgow Company, manufacturers of textiles. Prior to this there were several small mills in South Hadley, Granby and Belchertown.



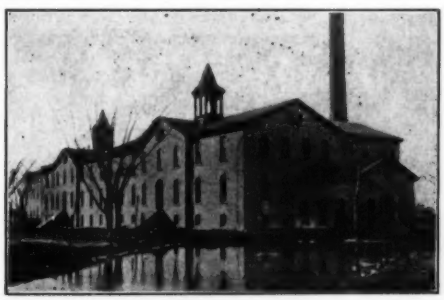
SOUTHWORTH PAPER CO., OLD MILL.

Holyoke—"The Paper City"

With the building of the first dam, which made Holyoke the power city of New England and attractive to industry, Joseph Parsons, who had been associated with the Ames mills and later principal owner of the Eagle mill at Suffield, Conn., purchased a grist mill to get power rights and then built the first paper mill in Holyoke in 1853. This is now the Parsons Division of the American Writing Paper Company. The old grist mill was later equipped to make paper and was called the Mt. Tom mill. It is now the Platner & Porter Division of the American Writing Paper Company.

After selling their mill the Parsons Paper Company built the "new" Parsons mill. Associated with the Com-

OLD FRANKLIN MILL.



NEW FRANKLIN MILL.

pany there has been three generations of the Bagg family, and among the original stockholders were Whiting Street, Broughton Alvord and Cyrus Frink—all noted men in the paper field.

From this time on in a few years Holyoke became the largest papermaking center in the world.

The Newton Brothers, John C. and Daniel H., built most of the earlier mills, while Moses and James H. Newton became interested in the manufacture of paper.

The Holyoke Paper Company's mill, now belonging to the American Writing Paper Company was the second Holyoke mill built in 1856, with D. M. Butterfield as agent. O. H. Greenleafe, a paperstock dealer, and also of the firm of Greenleafe & Taylor, owners of the mill at Huntington, now the Huntington Paper Company, purchased the Holyoke mill in 1865. It became a division of the American Writing Paper Company. In this mill William Whiting got his first paper making experience, first as bookkeeper and then as salesman. In 1865 he organized the Whiting Paper Company with L. L. Brown and converted a wire mill into what is now Mill No. 1. Mill No. 2 was built in 1871, and later the Collins Manufacturing Company of North Wilbraham became one of the group. However, at present it is not associated.

After the Lyman cotton mill discontinued operation in 1927 the Whitings, under a separate corporation, took over the buildings and equipped it as Whiting's Mill No. 3—the latest paper mill to be established in Holyoke.

The Valley Paper Company was built in 1866 by Aaron Bagg and others. A. W. Esleeck at one time was treasurer. It was operated by George F. Fowler.

The Riverside Paper Company was organized and built Mill No. 1 with Charles A. Chapin as its first President. Riverside No. 2 was built in 1892 William Caldwell and James Toole were associated with these mills. After the American Writing Paper Company took over these mills they added to the group Riverside No. 3, which was built in 1870 by the Bemis Paper Company, later known as the Union Paper Co., and afterward the Connecticut River Paper Company. Under management of Louis Powers, founder of The Powers Paper Company, the American Writing Paper Company sold the No. 2 and No. 3 mills to The Zeloid Company, the present owners.

In 1868 the Franklin Paper Company was organized and built by Calvin Taft and James H. Newton. For years it has been, and is now, owned by the Ramage family, John Ramage being the mill's first superintendent.

The Newtons built the Hampden Paper Company mill in 1869. It was burned, rebuilt and sold to Samuel Crocker from Lawrence. With his son Daniel in 1871 he built the present Crocker Manufacturing Company, a Division of the American Writing Paper Company. The Hampden Paper Company was taken over by the Albion Paper Company, headed by Calvin Taft, who a few years later, on adjoining property, built the present Albion Division of the American Writing Paper Company.

NEW MILL, SOUTHWORTH PAPER CO.

OLD AGAWAM MILL. SOUTHWORTH MILL IN DISTANCE.

In 1872 the Massasoit Paper Manufacturing Company, headed by E. C. Rogers, was built on a site previously occupied by a pulp mill that had been operated by the Newtons, and G B. Holbrook about the same time built the Beebe & Holbrook mill. These two mills, together with the Wauregan Paper Company's mill, built by James H. Newton in 1879, now form a group of mills operated as one division of the American Writing Paper Company.

The Excelsior Paper Company was organized in 1872. It was taken over about 1905 by James Taylor, formerly with the Hampshire Paper Company, the organization being the Taylor-Burt Company. This mill is now operated as the Taylor-Logan Company. The Dickinsons, who were paper stock dealers of Springfield, originally owned the Excelsior Mill. They also took over the old Albion mill in 1800 when Calvin Taft built his new mill. They operated this mill as the Dickinson & Clark Paper Company. The George R. Dickinson Division of the American Writing Paper Company was built by Mr. Dickinson in 1883.

The Newton Paper Company was organized by Moses Newton, George A. Clark and James Ramage in 1876. About this time the Newton brothers built a mill to make soda pulp—then known as "chemical," the mill being known as the "Chemical Mill."

In 1880 on the same site as the Chemical Paper Company's mill was built the largest mill in Holyoke, having six machines. This mill was taken over in 1913 by Clifton A. Crocker (son of Daniel Crocker) and R F. McElwain, as the Chemical Paper Manufacturing Company. These gentlemen organized and started the Crocker-McElwain Paper Company in the Old Winchester Building, which is now owned and entirely occupied by them.

The Winona Paper Company was organized in 1880 by R. M. Pulsifer and B. F. Hasford. This mill was built by the Newton brothers. It was later taken over by George C. Gill, who was secretary of the Chemical Paper Company. It was called for a time "Chemical Mill No. 2." Later the George C. Gill Paper Company was formed, and in 1899 was taken over as a division of the American Writing Paper Company.

The Syms & Dudley Paper Company was organized and mill built in 1880 by William Whiting, W. E Syms and George Dudley, the two latter being former employees of the Crocker Manufacturing Company.

The Nonotuck Paper Company mill was built the same year by Aaron Bagg, Jr., J. S. McElwain and others. When Syms & Dudley built their new mill at Watervliet, Mich., they sold their Holyoke mill to the Nonotuck Paper Company. It was known as Nonotuck Mill No. 2. It is now known as the Nonotuck Division of the American Writing Paper Company, while Nonotuck No. 1 was purchased in 1898 by the Esleeck Manufacturing Company, headed by A. W. Esleeck, who in turn sold it to the American Writing Paper Company, and it is now known as the Mt. Tom Division.

In 1891 James H. Newton, with his brother John C., organized the Norman Paper Company and built what was then a mill said to have been years ahead of its time It is now a division of the American Writing Paper Company.

The Linden Paper Company, now also a division of the American Writing Paper Company, was organized and built in 1892 by J. S. McElwain.

In 1908 The Pope Paper Company was started in an old building on Bigelow Street by C. Elmer Pope. After running a short time the small tissue machine was moved to Erving, Mass., where it now forms a part of the equipment of the Erving Paper Company.

At Mittineague, now called West Springfield, Mass., The Southworth Company's mill was built in 1839 and has been operated continuously to date by members of the Southworth family.

In 1865 the Agawam Paper Company was organized by George L. Wright, a pupil of the Ames mills, and later superintendent of the Southworth Company. The control of this company was taken over by B. D. Rising, who later took over an old cotton mill and equipped it as Agawam No. 2 mill. Both these mills became the property of the American Writing Paper Company, and later were purchased by the Strathmore Paper Company.

The Worthy Paper Company was organized by George L. Wright and others in 1872. It is now operated by the Worthy Paper Company Associates, headed by Edgar S. Bliss.

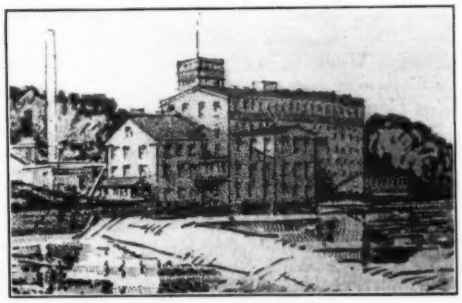
The Mittineague Paper Company was organized in 1892 by Horace A. Moses. This mill, as well as the two mills at Woronoco, are operated by the Strathmore Paper Company, of which Mr. Moses is still the head. The Woronoco mills, which were originally built by Jessup & Lafflin, passed through several hands, at one time being the Fairfield Paper Company.

At Westfield paper making was started by Jessup & Lafflin from Lee, Mass. This mill was later rebuilt as the Springdale Paper Company, which in turn was sold to the American Writing Paper Company.

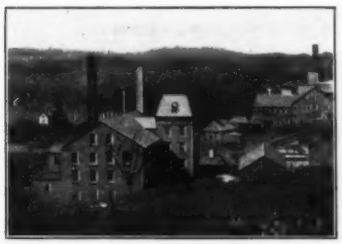
The Pultz & Walkley mill was built in 1871. It was sold during the early Eighties to Crane Bros., then to the Mars Paper Company, and is now operated as the Stevens Paper Mills, Inc.

In 1867 a branch of the Crane family from Dalton started a mill at Ballston Spa, N. Y. In 1871 they moved to Westfield and organized as Crane Bros. They made fine ledgers and also linen fiberware. This mill is now operated by Crane & Company of Dalton.

At Turners Falls power development was started by Alvah Crocker of Fitchburg When his Fitchburg Railroad was built through this section the Keith Paper Company, now under the management of Albert E. Smith, was organized by Alvah Crocker, B. N. Farren, John Keith, and others, in 1871.



WORTHY PAPER CO. MILL



PRESENT AGAWAM MILL NOW OWNED BY STRATHMORE PAPER CO.

The Montague Paper Company was organized in 1872 by B. N. Farren and W. D. Russell (of Lawrence, Mass.). It was later taken over by the International Paper Company.

The Turners Falls Paper Company was also organized by B. N. Farren. It was taken over by the International Paper Company, closed down and dismantled. It now belongs to the Keith Paper Company.

The Marshall Paper Company mill, built in the early nineties, was taken over by the Esleeck Manufacturing Company after A. W. Esleeck sold his Holyoke mill to the American Writing Paper Company.

West of Turners Falls on the Millers River is the Millers Falls Paper Company, built about 1910 by Edwin Bagg, Augus Cameron and others. It is now managed by John Bagg, formerly of the Parsons Paper Company.

Further up the Millers River are the Lindale Mills, formerly the Farley Paper Company. There were originally three mills—the Farley Paper Company, established in 1881, the Millers River Paper Company built in 1883, and the Goddard Wood Paper Company built in 1881, to grind wood pulp.

At Windsor Locks, Conn., Paper making was started by C. H. Dexter in 1832 in the basement of a grist mill. From this beginning has grown the large, modern mills of C. H. Dexter & Sons. This mill, and the old Whittlesy mill established in 1865, and now owned by the Rushmore Paper Company, are the only two now active of ten mills that operated there at different times.

The Seymour Paper Company, once the largest mill in the United States, became the Windsor Division of the American Writing Paper Company. This mill is still equipped but not operating.

The Deerfield Valley was developed by the Newton brothers during the late Eighties. They built a railroad and pulp mills, and were also interested in the Metal Edge Box Companies board mill at Readsboro, Vt., and the Ramage Paper Company at Monroe Bridge, Mass, which was rebuilt a few years ago and now operated by the Deerfield Glassine Company.

Holyoke, being the center of paper making a number of allied industries are located here.

The Paper Makers Chemical Corporation have a plant located here that supplies rosin size to nearby mills.

There are also three wire manufacturers whose plants that will be available for inspection, and also a dandy roll factory.

Hotel Reservations may be made direct to any of the following hotels:

Hotel	Capacity	Manager	Rates
Nonotuck 68 Suffolk St.	125 rooms	Sydney T. Dawson	$2.-$10.
Marble Hall High St.	54 "	Robert W. Delaney	$1.25-$2.50
Mt. Holyoke Hotel Mt. Holyoke	40 "	Andrew Vitali (American Plan)	$5.-$6.-$7.
Long House Inn Northampton St.	2 "	Mrs. Rose A. Bryant	$1.50-$4.
The Tavern Northampton St.	4 "	Mrs. W. A. Detwiler	$2 per room
Northampton Hotel Northampton, Mass.	75 "	Mr. L. A. Wiggins	$2.-$10.

New York Trade Jottings

Harold H. Werley, of the News Print Service Bureau, New York, and his wife, have just returned from Asbury Park, N. J., after spending an enjoyable vacation at that well known resort.

* * *

Biltmore Paper Company has been chartered under the laws of the State of New York, with a capital stock of 1,000 common shares. Siegel & Corn of 280 Broadway, New York, were the attorneys.

* * *

Vernon Bros. & Co., general paper merchants of 66-68 Duane street, New York, announce the addition of Waterfalls Vellum Text to their general lines. This is an extensive grade, made in wove, laid and hand made finishes.

* * *

Compact Carton Manufacturing Company, paper boxes, etc., of Brooklyn, N. Y., has been incorporated under the laws of the State of New York, with a capital of 100 common shares. Egan & Ittelson, of 2 Lafayette street, New York, were the attorneys.

* * *

Heller & Merz Corporation, of 286 Spring street, New York, have appointed L. L. Griffiths, of Kalamazoo, Mich., as sales representative covering Wisconsin, Minnesota and Michigan. Mr. Griffiths, better known as "Buster" among the paper mills, has been selling the paper industry in this section for seven years, and his many friends wish him success in his new connection.

* * *

The Traffic Department of the National Association of Waste Material Dealers, Inc., and the Waste Paper Institute, is arranging for a conference to be held at association headquarters, 1109 Times Building, New York, on Thursday afternoon, August 11 at 2 p.m. The purpose of this conference is to consider the subject of waste paper and rag freight rates in Official Classification Territory. This has been made necessary by the decision of the railroads through their authorized committee to do away with present commodity rates and establish in lieu of same, a basis of rates of 27½ per cent of First Class, 24,000 pound minimum and 25 per cent of First Class, 30,000 pound minimum. The associations referred to above have invited to this conference in addition to members of the two associations, representatives from all organizations in any way interested, including the New York Association of Dealers in Paper Mill Supplies, the Philadelphia Paper Stock Dealers Association, the Wool Stock Council, and the Felt Manufacturers Association, as well as traffic managers representing large consuming interests, feeling that the matter is of sufficient importance to warrant the belief that all parties concerned will be sufficiently interested to cooperate in carrying forward plans to oppose the proposed increased rates and also to ask the Interstate Commerce Commission to prescribe fair and reasonable rates for the waste paper industry.

New England Superintendents to Meet

The New England Division of the American Pulp and Paper Mill Superintendents' Association will hold its Fall meeting at the Hotel Waumbek, Jefferson, N. H., September 30 and October 1. The Hotel Waumbeck is one of the most famous of the summer hotel resorts in the White Mountains in the state of New Hampshire. It is surrounded by beautiful scenery and has one of the best eighteen hole golf courses in New Hampshire.

Problems Confronting Price Bros.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 8, 1932.—Lord Beaverbrook has withdrawn from Price Bros. & Co., as a result of the failure of creditors to accede to the demands of his proposed scheme for reorganization.

At the recent annual meeting of the company he set forth various conditions which he said had to be carried out by creditors and security holders in order to re-establish the company. Bondholders were asked to give up certain rights and creditors were asked to accept income debentures.

Two of the principal problems confronting the company were the continuance of payments under contract entered into with Duke-Price Power Company, which called for payments of about $1,200,000 annually for electrical energy and, secondly, guaranteeing of bonds issued by Price Realty Company. Both Duke-Price and Price Realty were asked to accept income debentures in lieu of cash payments. It would appear that these proposals did not meet with endorsement.

At the end of last year Price Bros. had outstanding $11,061,600 of 6 per cent first mortgage bonds. Originally $15,000,000 of these bonds were issued in 1923, but the amount has since been reduced to a little over $11,000,000 through the operation of the sinking fund.

As the situation now stands, the bondholders will not be able to take action to enforce their rights until the expiration of 90 days grace, during which time the company has the opportunity of making good its default on these bonds.

Meanwhile the government having given approval to the by-law reducing the number of directors from fifteen to nine, the resignation from the board is announced of J. A. Ogilvie, F. C. Cope, and H. W. Jackson. Three others are expected to resign shortly.

Chicago Paper Houses Combine

The Hanchett Paper Company, 866 Larrabee street, Chicago, has announced, effective as of July 30, the acquisition by that company of the assets and good will of the Associated Paper Company. Hereafter Associated Paper Company will conduct its business under the name of the Hanchett Paper Company and all accounts will be invoiced by the Hanchett organization. The Hanchett Paper Company, for over sixty years, and the Associated Paper Company for more than twenty years, have been developing and improving their facilities for servicing the trade in their own particular field of paper, bags and twine. It is a pleasure to announce that these two outstanding paper houses have now joined forces and their combined resources, experience and facilities for service have been made available to the many patrons of both houses.

Holyoke Water Power Co. Begins Suit

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., August 9, 1932.—The Holyoke Water Power Company has entered suit in the Hampden County Superior Court against the American Writing Paper Company, Inc., for $10,025 and interest alleged to be due for the payment of water rentals to the plaintiff company. This suit is the result of the proffer of silver in payment for water rentals tendered by the defendant company and refused by the plaintiff on two successive occasions. The old indentures call for payment in either silver or gold. Warren, Garfield, Whitesode and Lainson of Boston represent the plaintiffs and Avery & Gaylord of this city the defendants.

German Convention Numbers

The 1932 assembly of the Vereins der Zellstoff-und Papier-Chemiker und-Ingenieure was held in Munich. The *Wochenblatt für Papierfabrikation*, following its usual custom, issued its "Sondernummer," which, however, owing to the serious economic conditions of the country, consists of 50 pages of text and 84 pages of advertising, as compared with 100 pages of text and 120 pages of advertising for the special number for 1931. The number opens with a description of the paper department of the famous German Museum in Munich by Johannes Klemm. Dr. Viktor Theil discusses "The role played by paper in the cultural development of mankind."

W. Brecht and F. Haury present the first installment of a discussion of "Heating the web of stuff and warm air ventilation on pulp dryers." Dr. Carl G. Schwalbe points out that when spruce logs are soaked in dilute hot acid solution (about 0.5 per cent hydrochloric or sulphuric acid) for 0.5 to 2 hours, depending on the previous storage periods, the adhearing bark and bast can be readily removed with brushes. This treatment is, however, unsuccessful in the case of pine, probably due to the high rosin content of this species and of deciduous trees. For beech 0.1 to 0.5 per cent hot caustic soda solution proved very efficient, decomposing the bark and bast into a soft sludge, which can be readily rinsed off with water. Dr. Rudolf Lorenz describes experiments for determining whether kaolin suspensions can be refined by pressure treatment to such an extent that a ceramic kaolin becomes suitable for paper making purposes. The results were negative.

Dr. Erik Hägglund and some of his students show that in treating spruce with sulphurous acid at temperatures below 100 deg. C., lignin forms a stable compound with sulphur—Sulphurous acid sulphonates faster than sodium bisulphite. When cooking wood with 4 per cent sulphurous acid solution at 70 deg. C., the amount of acetic acid formed is as large as is obtained by the Schorger distillation.

K. Dittrich and W. Boos present the first part of a study of ground wood analysis by sieving. A chronological study is given of parchment manufacture.

Two studies of beating are presented. K. G. Jonas and P. Schlechter present a study of the setting of the roll of the beater, with the purpose of eliminating the personal factor. The lowering of the roll is carried out at definite intervals and a uniform distance is maintained between bars and bed plate. Reproducible results can be obtained. W. Brecht, R. Trenschel and W. Bachmayer recommend the use of alignment charts for recording certain characteristic data of hollander operations in order to become able to determine rapidly the most suitable hollander construction and optimum operating conditions for each individual case.

Der Papierfabrikant did not issue its regular Special Number this year but carries some of the convention papers in its regular issue for June 5 (No. 23). Dr. Schwalbe discusses the various compounds which aid in producing slime in the beater. This is a problem of the swelling of cellulose, since the slime forms from the cellulose which has swollen. The use of grape sugar is specially mentioned. According to Hägglund and Schollin-Borg, all other conditions being the same, the speed of the cooking reaction is faster when black liquor is added to the cooking liquor than when white liquor is used alone. Yields and strength are not influenced by the addition of black liquor up to 50 per cent. The color of the pulp becomes darker as more black liquor is added. Increasing the sulphidity increases the number of folds but decreases the tearing length somewhat.

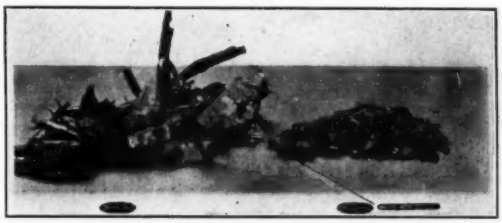
Hans Bomcke discusses the development of the chipper and von Possanner and Windju report tests on the effect of wood flour on the strength properties of ground wood, the results being given in tables and curves. Dr Wilhelm Stiel presents a general discussion of the use of electric drives for grinders, alternating current and synchronous motors and other applications of electricity in the paper mill. Von Hössle continues his historical studies.

—C. J. WEST.

The Nekoosa Uniform Chip Cutter

The Nekoosa Foundry and Machine Works, which brought out the Giant Nekoosa Bark Press and other paper making machinery, recently perfected the Nekoosa Uniform Chip Cutter which is in steady operation at the mill of the Nekoosa Paper Company, Nekoosa, Wis.

The object of the machine is to cut oversize chips instead of breaking them. The result is that the chips are more uniform and contain much less sawdust, furthermore, the power consumption is considerably smaller. How thorough work this machine is doing can be seen from the illustration showing chips before and after going through the machine.



The rotors with their independent motors and drive are mounted on independent frames which can move apart against heavy springs. The rotors are provided with removable teeth—rings of alloy steel, the bolt shown in the illustration passed between these rotors without scratching the teeth.

The sale of the Nekoosa Uniform Chip Cutter has been given to Fibre Making Processes, Inc., Chicago.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

De Pere, Wis.—The DePere Paper Manufacturing Company, Fort Howard avenue, has awarded general contract to Samuel Clark, 326 Marsh street, West De Pere, for rebuilding of one-story plant unit, 30 x 150 feet, damaged by fire a number of weeks ago. Work will be placed under way at once, and unit made ready for production. Herman Miller is manager. Estimated cost of work not announced. W. E. Reynolds, 113 South Roosevelt street, Green Bay, Wis., is architect.

Cleveland, Ohio—The William A. Howe Company, 2630 Payne avenue, operating a paper lithographing plant, has awarded a general contract through the Farrand Realty Company, an affiliated interest, headed by E. W. Reutner, president and treasurer of first noted company, to the H. G. Slatmyer & Son Construction Company, 203 Lakeside avenue, N. W., for construction of a new two and three-story plant, 85 x 131 feet, at 1615 East 31st street, estimated to cost close to $50,000, with equipment. Superstructure will be placed under way at once. Julius Boenisch, 1900 Euclid avenue, Cleveland, is architect.

Deferiet, N. Y.—The St. Regis Paper Company has resumed operations at its local mill, following a shut down of about two weeks. The mill will operate on a four or five day a week schedule until further notice.

Stillwater, N. Y.—The Stillwater Fibre Mills, Inc., have been organized under state laws, with capital of $50,000, by Harold R. Gillette, president of the Gillette Fibre Mills, Inc., with local plant for the manufacture of fiber sheets and products. It is understood that the new company will take over and succeed to the last noted organization. Other incorporators of the new interest are Benjamin Evans, 28 Lenox avenue, Albany, N. Y., and Harry J. Determan, 88 Willett street, Albany.

New York, N. Y.—The Uptown Card and Paper Company, 150 East 129th street, has arranged for an increase in capital from $20,000 to $50,000.

Green Bay, Wis.—The Straubel Paper Company, 625 Willow street, has begun construction by day labor of a one-story addition, 50 x 60 feet, to be used for storage and distributing service. It will be located at Willow and Monroe streets.

Asheville, N. C.—The American Enka Corporation has increased production to a full time schedule at its local cellulose rayon mills, giving employment to about 2000 persons. The plant has been on a curtailed basis for a number of months.

Bogota, N. J.—The Bogota Paper and Board Corporation has been incorporated under Delaware laws with capital of $650,000 and 10,000 shares of stock, no par value, to take over and succeed to the Bogota Paper & Board Company, with local mill for production of chip board and other board specialties. The incorporators of the new company include Hover C. Clark and Theodore Pearson, both of New York.

Thomson, N. Y.—The Iroquois Pulp and Paper Company is increasing production schedule at its mill, and entire normal working force of about 100 men has been reinstated.

De Pere, Wis.—The Brown County Paper Mills, Inc., recently organized under state laws, are said to be planning operation of a paper mill in this vicinity. The new company is headed by Herman H. Miller, 425 South Van Buren Street, Green Bay, Wis., identified with the DePere Paper Manufacturing Company, De Pere as manager; Jacob L. Reis, Green Bay; and Samuel D. Clark, De Pere.

Roanoke, Va.—Viscose Corporation of Virginia, Roanoke, is developing an increased production schedule at local cellulose rayon mill, and has added about 200 employees to the working quota. Further advance is expected at an early date. Mill is now giving employment to about 1000 operatives.

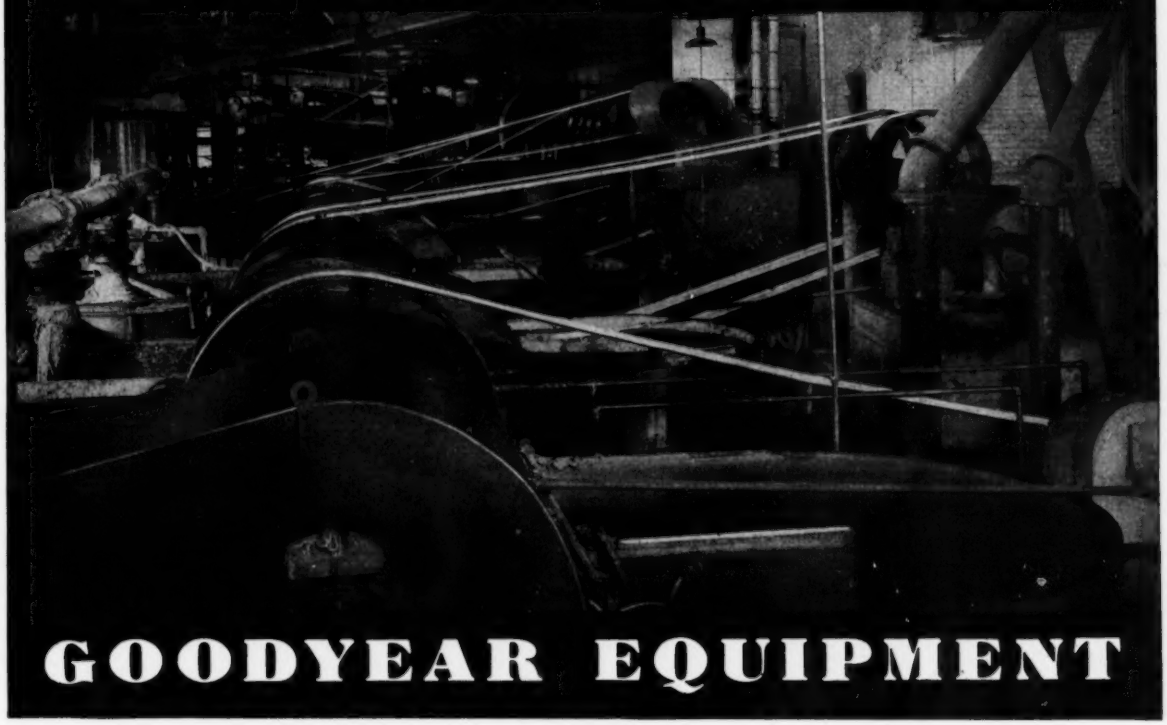
Franklin, Ohio—The Cheney Pulp and Paper Company is said to be asking bids for different features of rebuilding program for mill unit destroyed by fire a number of weeks ago, for which preliminary work has been placed in progress. The structure will be of brick and steel type, two-story, 60 x 100 feet, reported to cost in excess of $50,000, with equipment.

Philadelphia, Pa.—Frank H. Hodgson, Inc., has been organized under Delaware laws with capital of 100 shares of stock, no par value, to take over the paper products business heretofore operated under the name of Frank H. Hodgson, 1903 Germantown avenue, Philadelphia, specializing primarily in wall paper products. Branches are operated at 5401 Chestnut street and 714 East Passyunk avenue. New company is headed by Frank H. Hodgson and Joseph A. Clossick.

High Point, N. C.—The Carolina Container Company, Prospect road, manufacturer of corrugated fiber boxes and containers, has work under way on proposed new local plant, previously referred to in these columns, comprising a one-story unit, 80 x 120 feet. List of equipment to be installed has been arranged. New plant is reported to cost close to $30,000, with machinery. I. P. Ingle is president, in charge.

Brooklyn, N. Y.—The Compact Carton Manufacturing Company, Inc., recently organized by Edward Yudell, 9502 Kings Highway, Brooklyn, and associates, with capital of 100 shares of stock, no par value, is said to be planning operation of a local plant for the manufacture of paper and strawboard cartons, novelty paper containers, etc. Company is headed by same interests organizing the Standard Folding Cartons, Inc., lately referred to in these

PUT YOUR FAITH IN



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GOODYEAR

columns, and which, likewise, proposes operation of a local works.

Chicago, Ill.—The Vortex Manufacturing Company, 421 North Western avenue, manufacturer of paper cups, etc., is running on an improved production schedule at plant, giving employment to a large working quota. Present rate of output will be continued for an indefinite period.

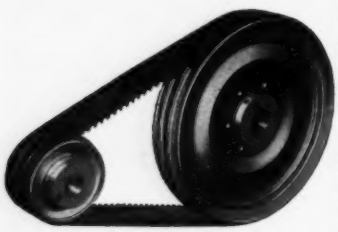
Winston-Salem, N. C.—The Mengel Company, Louisville, Ky., manufacturer of boxes, containers, etc., has recently completed the installation of equipment in branch plant at Winston-Salem, for the manufacture of corrugated shipping containers, and is developing an increased production schedule for this line of output.

Chicago, Ill.—The Clinton Paper Company has filed notice of company dissolution under state laws.

Wilmington, Del.—The Jessup & Moore Paper Company is establishing high records for safety at its Kenmore mills, and in a contest now being conducted under the auspices of the Delaware Safety Council, the company stands third in Group A plants.

New Line of V-Pulleys

The Dayton Rubber Manufacturing Company of Dayton, Ohio, makers of Dayton Cog-Belt Drives, announces a new economy in power transmission equipment. This is a new line of "Day-Steel" single and multiple V-Groove Pulleys for use with Dayton Cog-Belts, for ratings of 7½ hp. and below.



These new "Day-Steel" Pulleys not only effect a tremendous saving in cost, but are also much lighter in weight, making them ideally suitable for machines requiring these smaller horsepowers. They are accurately formed from heavy gauge pressed steel for maximum strength—strongly welded both at the rim and at the web—and rigidly assembled with a hub of unique construction to give an accurately balanced and true running pulley of exceptional ruggedness and pleasing proportions. A high quality aluminum finish adds much to the appearance of the product. Complete engineering and price data is given in Bulletin No. 110 which will be finished on request.

Suffocated in Dry Clay

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, August 8, 1932.—Eugene Sellers, 26 years old, 152 Gordon avenue, Hamilton, was suffocated last Friday when he fell into a hopper of dry clay, used in the coating of paper, at the plant of the Champion Coated Paper Company in that city. Sellers was working on top of the bin, when in some manner he fell into it. Harlan McQuinlay, foreman in that department, noting Sellers' absence and the fact that the powder was not feeding in its customary volume, discovered the man's body.

It required more than an hour to remove the body from the bin. Dr. Edgar Cook, coroner of Butler county, is conducting an investigation of the fatality, one of the few that has occurred at the Champion mills where safety-first measures are strictly enforced. It is the belief that Sellers, in an unguarded moment, made a misstep which cost him his life. Funeral services were conducted from his late home yesterday, with many paper mill workers of Hamilton and Middletown in attendance.

BROWN COUNTY MILLS FORMED

(Continued from page 9)

cock, personnel director of the Northern Paper Mills, in an address before the Rotary Club of Green Bay, Wis., last week. The depression is a bitter kind of pause before a period of better progress, he said. A man should learn to have a well rounded life and find other things than just the pursuit of wealth if he is to be content. Everything in life should be shared with others in order to get the most out of being alive.

Inheritance taxes on the estate of George A. Whiting, deceased president of the George A. Whiting Paper Company, Menasha, Wis., and the Whiting-Plover Paper Company, Stevens Point, Wis., amounted to $316,946.20, according to an appraisal by the probate court. The total estate amounts to $3,510,520.85. The tax was the largest paid in Winnebago county, where the will was probated.

Paul Smith, former general manager of the Combined Locks Paper Company, Appleton, Wis., has been named manager of the Blandin Paper Company, Grand Rapids, Minn. He has assumed his new duties. Mr. Smith resigned from the Combined Locks company several months ago.

Charles Hornbeck has returned to his home at Appleton, Wis., after spending six and a half months at the Blandin Paper Company, Grand Rapids, Minn. He served as technical color instructor during that period. Mr. Hornbeck is now enjoying a vacation.

Straw Crop Above Average

DAYTON, Ohio, August 8, 1932.—Reports here indicate that the straw crop in this section of the country is about average. Wheat yields vary in different sections of the Miami Valley, extending from six to 30 bushels an acre. Most of the yields in Butler county average 12 to 14 bushels an acre while those in Montgomery and Greene counties, other sections of the Miami Valley, were much higher. The cause for the low yields is attributed to the dry weather. The Hessian fly probably reduced Butler county's yield 15 per cent, according to D. T. Herr, county agent. This estimate was based on field examinations which showed 20 per cent barren stalks and 25 per cent of damaged heads, and a more complete survey of the county which showed an average total infestation of 32 per cent.

The fly injures wheat by extracting the juices of the young growing plants in the Fall and by weakening the stems of the older wheat in the Spring, causing it to become straw fallen shortly before the harvest. Naturally, the straw crop is not of the best under these conditions.

What is true of this section of Ohio, prevails in other parts of the state, and as a result it is not expected that the straw crop will be the best.

Almost the same conditions prevailed in Indiana, Michigan and Illinois, it is reported.

Mead Paper Co. Men Get Patents

John Traquair and J. J. O'Connor figured in 46 claims representing patents on new methods in paper manufacture just granted by the patents office at Washington, D. C. All are assigned to the Mead Corporation, Chillicothe, Ohio.

Mr. Traquair was granted two patents, the first representing 21 claims and the second, 19 claims. The latter was worked out in collaboration with Herbert A. Kidd.

Mr. O'Connor's three patents represent six claims. Mr. Traquair and Mr. O'Connor filed in 1929 and 1930.

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COMING EVENTS

Technical Association of the Pulp and Paper Industry, Fall Meeting, Nonotuck Hotel, Holyoke, Mass., September 14, 15 and 16, 1932.

RETURNING CONFIDENCE

The paper industry along with business in general has been greatly heartened by the developments of the past few weeks. The business outlook is distinctly better than it has been. The return to normalcy will not occur overnight but there are increasing signs that this much to be desired consummation is taking place.

Analyzing the more hopeful atmosphere in the business world the *New York Times* says that "it probably means that the extreme apprehension regarding the course of events in the immediate future has been shaken or removed. During more than a year the financial and business community has been under the influence of a succession of events, each of which was described as a portent of sure and immediate disaster. The prolonged decline of staple prices, the bank failures, the collapse of public revenue, the panic in European banking circles, the run on German and British reserves, the suspension of gold payments by Great Britain, and the ruge withdrawal of gold from the United States, as Europe's central banks called home their "reserves abroad"—these sinister occurrences following close on one another's heels, had not only broken down financial confidence but had given rise to the most extravagant ideas of impending consequences.

"None of the predicted calamities has occurred. Governments have gone honestly to work adjusting revenue to expenditure. Germany has been protected from another break-down of her currency. England has strengthened her international position and is rebuilding her shattered gold reserve. Not only have gold exports from the United States ended, but since the middle of June $82,000,000 gold has been added to the Federal Reserve. It is possible that the Stock Exchange has been reflecting automatically, not only return of confidence in the financial mind but hope that this scattering of financial thunderclouds will eventually change the prevailing sentiment in the business mind.

"The extent to which such expectation will be fulfilled, and when, is always puzzling. The belief entertained in many experienced trade circles that production, during the period of acute apprehension, has fallen far below the requirements for replacement and preemptory needs, is perhaps the most reasonable ground for anticipating recovery, once confidence is restored. The bearing of these considerations on the immediate future is as yet more or less a matter of conjecture. But the fall in prices of commodities has also been checked; the average rose appreciably last month, for the first time in the present year. The recovery may not continue; yet it must be remembered that the decline in prices for merchandise, like the decline in stocks, had been abnormally prolonged and established utterly abnormal levels, from which the recoil would necessarily be considerable if return of business confidence were to stimulate increased purchases.

"It is at least possible that financial reminiscence in the longer future will describe and classify the unlimited pessimism which prevailed not very long ago, alike in finance and in general business, as similar in character and duration to the extravagant ideas of perpetually rising prosperity which prevailed two or three years ago."

COOPERATION IN REFORESTATION

More than a hundred million trees were distributed by State forestry departments for forest planting last year, says the U. S. Department of Agriculture, on the basis of reports compiled by the Forest Service. These trees were grown in State nurseries, and no privately grown trees are included in the figure.

Of the total number of trees distributed, 25,510,052 were sent out for farm planting, 38 States and two territories cooperating with the Forest Service in this activity. In addition, 52,507,690 trees were planted on State lands, and 24,839,109 were distributed for planting on private forest lands other than farms. Plantings of all three classes gained nearly 30 per cent over 1930 when the total distribution was 79,319,000 trees.

In total trees distributed for planting on all classes of lands except National Forests, New York led with 41,211,500; Michigan was second with 23,871,248; Pennsylvania more than 8 millions; and Wisconsin, Ohio, and Massachusetts more than 3 millions each. Indiana and Connecticut each passed the 2 million mark.

Pennsylvania led in farm forest planting, with 6,028,835 trees, followed by New York with 4,800,000, Ohio with 1,743,506, Puerto Rico with 1,253,800, and Michigan with 1,238,520. Nebraska, Wisconsin Tennessee and Indiana each sent out more than three-quarters of a million trees for planting.

Of species sent out for planting in farm forests, pines and spruces were far in the lead, with more than 15

million trees. Of the pines, approximately 3,800,000 were white pine, more than 8 millions were Scotch and red pines, and 500,000 were jack pine, planted chiefly in the Northeastern States, New York, Pennsylvania, the upper Ohio Valley and the Lake States. Ponderosa pine was planted in smaller lots in Western and Central States. Spruce and other pulpwood species totaling more than 4 million trees were distributed largely in the Northeast and the Lake States.

For the farms of the South, more than 2½ million trees were distributed, chiefly slash, loblolly, longleaf, and shortleaf pines, with some pitch pine, white pine, Scotch and Austrian pines, also cypress, gum, locust, walnut, tulip and other hardwoods.

Black locust plantings numbered nearly 1½ million trees, Tennessee leading with 723,000. Many of the locust plantings were for the dual purpose of growing wood products and checking erosion and gullying. Black walnut plantings were extensive, Ohio putting out 68,000 trees, and Iowa, 55,000.

Under the Clarke-McNary law, the Federal Government cooperates with the States in the production of trees for farm forest and woodland planting. The trees are distributed through State forest agencies directly to the farmers, usually at cost. The Federal Government does not distribute planting stock for State or private lands.

Northwest Superintendents To Meet

The Northwestern Division of the American Pulp and Paper Mill Superintendents Association will meet September 16 and 17 at Cloquet, Minn., under the auspices of the Northwest Paper Company. C. I. McNair, Jr., general chairman, has announced the following program:

FRIDAY		
Registration, Hotel Duluth	9.00	A.M.
Sectional Meetings on Pulp and Paper Making	10.00	"
Stag Luncheon, Hotel Duluth	12.30	P.M.
Busses leave for Cloquet	2.30	"
Inspection of Mills at Cloquet	3.00	"
Buses return to Duluth	5.30	"
Joint Banquet, Hotel Duluth	7.00	"
SATURDAY		
Busses leave for Cloquet	8.30	A.M.
Golf Tournament at Cloquet Golf Club	9.30	"
Trap Shooting at Cloquet	10.00	"
Luncheon at Cloquet Forest Experimental Station—Award of prizes	2.00	P.M.
Busses return to Duluth	4.30	"
LADIES ENTERTAINMENT		
Registration at Hotel Duluth	9.00	A.M.
Sightseeing Tour Boulevard Drive and Residence Section	10.00	"
Luncheon at Popular Cafe, Bridge to follow	1.00	P.M.
Joint Banquet at Hotel Duluth	7.00	"
SATURDAY		
Busses leave Hotel Duluth 10.30 A.M. for dock		
Boat Trip via S. S. Montauk to Fond du lac.		
Busses leave Fond du lac through Jay Cooke Park to Cloquet, arriving Cloquet Forest Experimental Station at 2.00 P.M.		
Luncheon at Cloquet Forest Experimental Station—Award of Bridge Prizes	2.00	P.M.
Busses leave for Duluth	4.30	"

Union Bag Mill Closed

HUDSON FALLS, N. Y., August 5, 1932.—Blaming labor trouble, John P. Gamble, general manager of the Union Bag and Paper Corporation, announced this afternoon that the Fenimore mill of the company will be closed. The machinery is expected to be dismantled and shipped away. Mr. Gamble declared that the closing bears out in part the prediction made by Alexander Calder, the president, at the beginning of a strike several weeks ago. Mr. Calder said that labor trouble at the Hudson Falls or Fenimore mills of the company would sooner or later bring about complete suspension of paper making there.

This action by the company will concentrate all of its manufacturing operations in this vicinity in the Allen division at the foot of John street, Hudson Falls. How long this division is to operate is problematical, although Mr. Gamble said it would run indefinitely, with a probable return to three shifts soon.

The mill employs about 100 men, with 400 other workers in the nearby bag factories. Nearly 100 men were employed at the Fenimore mill. Since the strike was declared at the Union Bag plants on May 21 in opposition to a wage cut and refusal of the company to recognize the unions the Fenimore and Allen mills have been operated by strike breakers.

In his statement Mr. Gamble said the company had continued to operate the Fenimore mill until August 1 in the hope that the union men would return to work under the company's terms, but their refusal resulted in the decision to close it. He declared that repeated outbreaks between the strikers and strikebreakers were partially responsible for the decision to close the mill. For several weeks a corps of deputy sheriffs, paid by the company, guarded the mills and strikebreakers at considerable expense. These officers were withdrawn August 1.

Plattsburg Mills Expand

[FROM OUR REGULAR CORRESPONDENT]

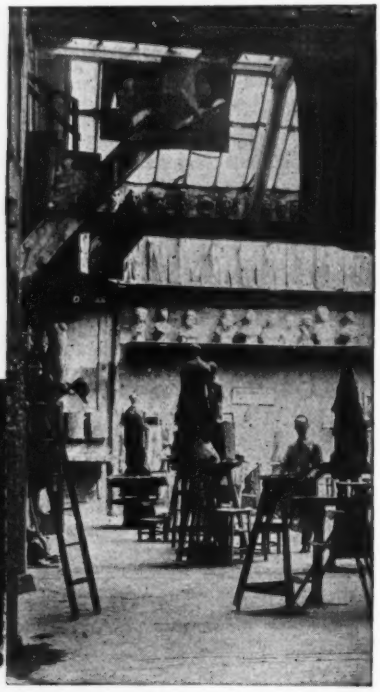
PLATTSBURG, N. Y., August 8, 1932.—An expansion program is now under way at the mills of the Berst, Forester & Dixfield Company which will entail an expenditure of about $100,000. Ground was broken this week for a large addition which is to be constructed near the main mill. The structure will be two stories high, 210 by 152 feet, with brick and steel materials used throughout. The James Light Company, of Minneapolis, has been awarded the contract. A small force is now employed on the excavation work which will be enlarged as soon as actual construction is started.

A contract has also been awarded to the same company for remodeling the beater room and the construction of a new filtrating plant. It is also said that new machinery has arrived at the mills within the last few weeks which will allow increased production. It is expected that the mills will be operating at capacity within a few weeks. Officials would not reveal the purpose for which the new building is being constructed.

D. & W. Co. To Be Champion Distributors

The D. & W. Paper Company of New Orleans, La., has been appointed a distributor for the Champion Coated Paper Company of Hamilton, Ohio.

The D. & W. Paper Company, Inc., has been printing, publishing and advertising paper requirements of New Orleans and vicinity for 12 years. During this time it has rigidly adhered to the highest standards of service by handling papers which in the judgment of its management are best suited for the particular requirements of its market.



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Numerical Factors for the Dot-Count Method of Fiber Analysis

By William Landes[1]

In running a fiber analysis by the dot-count method, the fibers having the greatest total length will have been crossed over the greatest number of times. As the method is used now, the proportion of the number of times that one fiber is crossed to the number of times that another fiber is crossed is indicative of the proportion by weight of the first fiber to the proportion by weight of the second fiber in that mix.

In an analysis of a 50 per cent soda—50 per cent rag mix:—

Soda fibers crossed 1040
Rag fibers crossed 567
Total fibers crossed 1607

$$\frac{\text{Rag fibers}}{\text{Total fibers}} = \frac{567}{1607} = 35.2 \text{ per cent rag.}$$

$$\frac{\text{Soda fibers}}{\text{Total fibers}} = \frac{1040}{1607} = 64.8 \text{ per cent soda.}$$

According to the present mode of application of the dot-count method, this would be reported as 35 per cent rag and 65 per cent soda introducing a 15 per cent error. This error is due to the fact that a unit weight of soda fibers will contain twice as many fibers and twice the total length of fibers that a unit weight of rag will contain. As early as 1917 Spence and Kraus [2] determined that equal lengths of fibers do not represent equal weights. This was substantiated by Graff [3] in 1925 and is acknowledged by every analyst using the estimation method of fiber analysis. To correct this error in the use of the dot-count method a factor should be applied which brings the total soda count to a comparable basis with the rag count as:—

$$\text{Factor} = \frac{\text{Rag fibers}}{\text{Soda fibers}} = \frac{567}{1040} = .5452$$

Soda fibers counted by factor or $1040 \times .5452 = 567$
Rag fibers counted by unity or $567 \times 1.0 = 567$

$$\frac{567}{1134} = 50 \text{ per cent rag.} \qquad \frac{567}{1134} = 50 \text{ per cent soda.}$$

Rag fibers are chosen as the standard with which all the others are compared because it is easily distinguished from all the others and because it is easier to obtain a standard rag fiber in the form of a standard filter paper than any other fiber.

The purpose or scope of this paper is to show in which cases factors are necessary and to present experimental data supporting certain factors obtained.

Analytical Method

The method used to determine a factor for a certain pulp follows:—

The sheet of pulp was allowed to air dry at least twenty-four hours alongside of a sheet of rag filter paper (Munktell's No. 00). About .1 gram from each sheet was weighed to four decimal places in a weighing bottle. A moisture test was run on each sheet and the original weight converted to a bone dry basis. These samples were either allowed to soak over night or were boiled for five minutes in distilled water. The pulps were kneaded with the fingers under water and then shaken in a test tube until thoroughly disintegrated. About one-fifth of the pulp mixture was poured into another test tube and here it was repeatedly diluted to the correct consistency for mounting. After thoroughly shaking the mix in the test tube, a glass tube having a rubber bulb on one end and a smoothened opening about 7/32 inches in diameter at the other, was quickly inserted two inches below the surface, two bubbles were expelled and about one-half inch of the mix withdrawn.

Meanwhile four glass slides and eight cover glasses had been cleaned and dried. The entire contents of the tube were released forming one spot on the slide about an inch in diameter. The test tube was again thoroughly shaken and another sample was withdrawn as before and mounted on the other end of the slide. The slide was placed in an electric oven and dried at 105 deg. C. The diluted mix was now thrown away and another portion was removed from the original mixture. This was again diluted to the correct consistency and two spots were made on a second slide as before. A third and a fourth slide were prepared and dried in the same way. Only one-fifth of the original mix was retained for reference. In this way almost the entire original mix was diluted and examined.

Since each determination consisted of rag and some wood fiber, Herzberg's stain or a modified Alexander's stain was used. After being stained each spot was covered with a cover glass and placed upon the microscope. By means of the mechanical stage, six complete horizontal trips and six complete vertical trips were made across each spot. Two slides containing four spots made one analysis.

[1] Junior member TAPPI, chemist, 73 East 98th Street, New York, N. Y. Formerly chemist for the Castanea Paper Company, Johnsonburg, Pa.

Two analyses were run simultaneously to make one factor determination. The two analyses generally checked very closely. The average of both analyses was taken as the factor for that pulp. At least 1,000 fibers were counted in each analysis. To show how closely the analyses checked, four analyses were made on a 50 soda, 50 rag mix as shown in Table 1.

TABLE 1

Analysis	Soda Fibers Counted	Rag Fibers Counted	Factor
1	1040 (a)	567	.5452
2	1098	595	.5419
3	859	468	.5448
4	1249	674	.5396
Average			.5429

(a)

B.D. Wt. of rag in mix = R.
B.D. Wt. of pulp in mix = W.
Rag fibers actually counted = F_r.
Pulp fibers actually counted = F_w.

$$5\ F_r \times \frac{(R + W)}{R} = \text{Rag fibers counted.}$$

$$5\ F_w \times \frac{(R + W)}{W} = \text{Wood fibers counted.}$$

Example: R = .1224, W = .1246, F_r = 562, F_w = 1049

$$\frac{5 \times 562 \times (.1224 + .1246)}{.1224} = 567$$

$$\frac{5 \times 1049 \times (.1224 + .1246)}{.1246} = 1040$$

To show in which cases factors were necessary a 50 per cent rag—50 per cent wood pulp mix for each of soda, sulphite, ground wood and sulphate was made. A factor was determined for each of these pulps. (Table 2)

TABLE 2

Wood Pulp	Rag Fibers Counted	Wood Fibers Counted	Factor
Soda (poplar from Castanea)	1162	2138	.543
Sulphite (Penobscot)	1316	1353	.972
Ground Wood (source unknown)	2345	2175	1.078
(a) Sulphate (Bleached Loblolly Pine from Forest Products Laboratory)	1475	794	1.857

(a) A sample of long leaf pine was cooked in a semi commercial digester by the sulphite profess. A factor was determined for this to check the above: Rag Fibers = 1910 Wood Fibers = 1018 Factor = 1.876

These are factors obtained for one variety of each pulp and so will not hold true for every sample of that class of pulp. There can be no question, however, as to the advisability of using factors with the dot method.

Experimental Data

The second part of this paper is devoted to presenting the experimental data obtained in securing a factor for soda pulp and a factor for sulphite pulp. In selecting a factor for a class of pulp, which would be suitable to all analysts in analyzing papers regardless of where the paper came from or where the pulp was made, there are three variables to be considered.

TABLE 3

Source of Sulphite	Factor	Error in a 50% rag—50% sulphite mix if the standard factor 1.0 were applied
1—Canadian (Penobscot)	.972	0.7% (c)
2—Scandinavian (Tofte)	1.066	1.6%
3—Eastern U. S. A. (Castanea)	.909	2.4%
4—Western U. S. A. (Everett) (a)	1,318	6.8%
5—Hemlock (Forest Prod. Lab.) (b)	.989	0.2%
6—Russian Spruce (Lab. cook at Castanea)	.979	0.5%
Average	1.039	

(a) Another Western sulphite was analyzed to check the wide variation of this factor. Olympic Forest Products Company—1.352.

(b) A complete determination was made for bleached hemlock and for unbleached hemlock to check this factor:

Bleached Hemlock	.9779
Unbleached Hemlock	1.0002
Average	.989

(c) This Northern Maine sulphite was chosen to represent the Canadian species, since no Canadian sulphite was available.

Example: In a 50% rag—50% Penobscot mix:—
Rag fibers—1000 Sulphite fibers—1028.

$\frac{1000}{2028}$ = 49.3% rag.

$\frac{1028}{2028}$ = 50.7% sulphite.

(1)—The variable in weight of fiber due to the species of wood derived from, the place where the tree grew, the conditions under which it grew, how old the tree was when cut, how the wood was cooked, whether bleached or unbleached, etc.

(2)—The variable in character of the fiber due to treatment in the paper mill, how beaten, how jordaned, etc.

(3)—The variable in personalities of analysts in preparing the paper, in mounting, in counting and in distinguishing one fiber from another.

The first variable was covered by comparing pulps from sources as widely separated as possible, with the standard rag fiber. Table 3 shows that in all cases but that of the Western sulphite the factors are reasonably close.

If any of the sulphites were made into a 50-50 mix with rag an error of less than 3 per cent would result by applying the standard factor of 1.0 with the exception of the Western Sulphite. With this, an error of 7 per cent would result. Although the Western sulphite looked very much like the hemlock from Forest Products Laboratory, its weight factor is unquestionably different since a weight factor obtained for another species of Western sulphite checked the first one while two separate determinations of hemlock—one of bleached and the other of unbleached—also checked. The author cannot explain this discrepancy. However, it is felt that the general sulphite factor of 1.0 will hold true for most analyses.

The variable in weight of the fiber due to its origin was also covered for soda pulp. Here we ran into a number of different species of fibers having totally different factors. Fortunately, however, the factors balance each other very nicely. Samples of unbleached aspen (poplar), birch, and sugar maple and bleached beech were obtained from the Forest Products Laboratory. A factor was derived for each one of these. These factors checked closely with those obtained by Spence and Kraus and by the 1925 paper testing committee[3] of the Technical Association of the Pulp and Paper Industry.

TABLE 4

Pulp	Dot Factors	Spence-Kraus Factors	Committee Factors
Beech	.500 (b)	.525	...
Birch	.634	.662	.521
Maple	.319	.365	.360
Poplar	.534	.454	.517 (a)

(a) Average of three different poplar pulps analyzed by the Committee, viz. —.485, .520 and .545—averaging .517.

(b) Samples from Forest Products Laboratory, Madison, Wis.

A factor was also determined for poplar pulp produced at the Castanea paper mill. This was .543 as compared with .534 for the Forest Products poplar pulp. From the other work done and from the two poplar pulps analyzed as above, the variation within the species of soda pulp obtained from different sources may be neglected. A greater variable in soda pulps exists due to the different proportions in which the various species of fibers are mixed. It is felt that a pure poplar pulp makes up the greatest amount of soda pulp. Next in popularity would be a soda pulp made from a "hardwood" mix of beech, birch and maple. These two varieties of soda pulp are perhaps most common. An average factor was obtained for the beech, birch and maple combination. This checked closely with the factor obtained from a beech, birch and maple soda pulp product at Castanea. The calculated average was averaged with the poplar factor to give a general soda pulp factor. (Table 5)

TABLE 5

Pulp	Factor	Factor for B.B.M. soda pulp at Castanea
Beech	.500	...
Birch	.634	...
Maple	.319	...
Average	.484	.464
B.B.M. (Forest Products Laboratory)	.484	
Poplar (Forest Products Laboratory)	.534	
Average	.509—General soda pulp factor.	

There may be other hardwood species used to some extent such as the gums. More complete investigation should be made to determine the factors for them and to determine their influence upon the general factor.

A comparison of the factors for bleached and unbleached pulps showed that a negligible variation is introduced by bleaching the pulp. (Table 6)

TABLE 6

Bleached sulphite (Castanea)	.909
Unbleached sulphite (Castanea)	.898
Bleached Hemlock (Forest Prod. Lab.)	.978
Unbleached Hemlock (Forest Prod. Lab.)	1.000

The second variable to be considered in selecting a factor that will hold for all pulps of one class is that due to varying treatments in the paper mill. The variation in the factor due to variations in beating was followed by ball-milling a sample of Castanea sulphite. Enough was taken out at the intervals to run freeness tests. A sheet was made of the pulp and a factor determined for it.

Beating Time and Freeness

Table 7 shows the variation in factor with time of beating and with freeness:—

TABLE 7

Time of Beating in hours	Freeness in c.c. at 3% cons. & 70° F. (Green)	Factor
0	700	.9088
½	460	.9190
1	240	.9342
2	85	1.0330
3	75	1.2386
4	100	1.3800

It can be seen that under ordinary beating conditions the factor will not vary appreciably. However, if the beating is prolonged, the fibers gelatinize and lose their fibrous structure. This causes the number of fibers in any given weight of hydrated stock to decrease, thereby increasing the factor. Although the pulp was beaten in the ball mill for only one hour, the decrease in freeness from 700 cc to 240 cc showed that the stock was hydrated as much as is generally done in the industry. The factors obtained for the unbeaten pulps will therefore, not vary appreciably from the true factors for pulps which have undergone ordinary beating in the paper mill. Since rag fibers fibrillate more readily and are beaten for longer periods of time in the industry than wood fibers, factors determined for rag fibers may change with variations in beating. Since no work was done with rag fibers the general conclusion will hold only for wood fibers.

The third and probably the greatest variable in choosing a factor for a specific pulp is the personal error of the analyst. This is the greatest of all obstacles in deciding upon one factor to be used on all pulps of a certain class by all analysts. In Professor Libby's report [4] on the accuracy of the Dot Method as compared with the then standard method (1929) the results of eleven different analyses by eleven different analysts on each of six different papers were presented. From the reported analysis of a 70 per cent rag—30 per cent soda mix and a 70 per cent rag and 30 per cent sulphite mix, factors were calculated for soda and for sulphite on a 50-50 basis.

Reported rag per cent = R
Reported soda or sulphite per cent = S

$$\text{Factor} = \frac{3R}{7S}$$

As Lab. A_2 reported 71 per cent rag and 29 per cent sulphite in a 70 per cent rag—30 per cent sulphite mix:

$$\frac{3 \times 71}{7 \times 29} = 1.049 \text{ factor.}$$

$$71 \times 1 = 71 \qquad \frac{71}{101} = 70 \text{ per cent rag.}$$

$$29 \times 1.049 = 30 \qquad \frac{30}{101} = 30 \text{ per cent soda.}$$

From Table 8 it can be seen that the factors for soda varied from 0.524 to 1.000. The factors for sulphite varied from .670 to 1.155. The greatest variation in factor due to personal error was in the 60 per cent sulphite —40 per cent ground wood mix. Assuming the factor for sulphite to be 1.0 the factors for ground wood varied from .782 to 2.206. To choose one factor that would satisfy everyone of these eleven analysts is impossible. We can, however, choose one factor that will reduce the error of the greatest number of analysts, appreciably. Applying the factor of .5 for soda pulp to the results reported by each of the eleven analysts, the maximum deviation is reduced from 16 per cent to 12 per cent while the mean deviation is reduced from 8 per cent to 6 per cent. The standard method still is more accurate, however, since the maximum deviation by that method was 10 per cent while the mean deviation was 0 per cent. The results of the 70 per cent rag—30 per cent sulphite need not be altered. They show that the mean deviation is 3 per cent and the maximum deviation 9 per cent as compared with a 2 per cent mean deviation and a 20 per cent maximum deviation by the standard method.

Although an average factor could have been chosen from the eleven analyses which would have showed a very decided increase in the general accuracy of the analyses, we feel that the factor determined from the various soda and sulphite pulps as explained above have more weight than the factor obtained from one species of soda or sulphite pulp even if it were obtained by eleven different analysts. If a soda fiber factor were obtained from 5 or 6 different soda pulps by 5 or 6 different investigators then that factor would have precedence as a general factor over the one presented above. The same holds true for sulphite although here the eleven analysts agree more closely.

A general factor for groundwood and for sulphate have yet to be determined. Of the three variables, the personal is the greatest and until more work is done by more investigators no one factor will suit everyone.

TABLE 8

	B. Rag—70% B. Soda—30%				B. Rag—70% B. Sulphite—30%		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Analyst	Dot M. as reptd.	Standard M. as reptd.	Dot M. using factor	Factor cal. from (1)	Dot M. as reptd.	Standard M. as reptd.	Factor cal. from (5)
A_1	R 69	R 72	R 82	.972	R 64	R 77	.761
	S 31	S 28	S 18		S 36	S 23	
A_2	R 70	R 73	R 82	1.000	R 71	R 75	1.049
	S 30	S 27	S 18		S 29	S 25	
B	R 60	R 70	R 75	.642	R 65	R 50	.796
	S 40	S 30	S 25		S 35	S 50	
C	R 56	....	R 72	.545	R 61	....	.671
	S 44		S 28		S 39		
D	R 61	R 74	R 76	.671	R 73	R 63	1.158
	S 39	S 26	S 24		S 27	S 37	
E	R 55	R 70	R 71	.524	R 67	R 70	.874
	S 45	S 30	S 29		S 33	S 30	
F_1	R 60	R 65	R 75	.642	R 65	R 55	.796
	S 40	S 35	S 25		S 35	S 45	
F_2	R 55	R 60	R 71	.524	R 65	R 75	.796
	S 45	S 40	S 29		S 35	S 25	
G	R 68	R 75	R 81	.911	R 69	R 65	.953
	S 32	S 25	S 19		S 31	S 35	
H_1	R 63	R 75	R 77	.729	R 71	R 75	1.049
	S 37	S 25	S 23		S 29	S 25	
H_2	R 62	R 75	R 76	.700	R 67	R 75	.874
	S 38	S 25	S 24		S 33	S 25	
Mean	R 62	R 70	R 76	.713	R 67	R 68	.888
	S 38	S 30	S 24		S 33	S 32	.888
Mean deviation	± 8	± 0	± 6		± 3	± 2	
Maximum deviation	±16	±10	±12		± 9	±20	

RAG SODA MIX VARIATIONS

	Below 5%	Between 5-10%	Over 10%
Dot method as reported	3	3	3
Dot method with factor	5	3	3
Standard method	9	1	

RAG SULPHITE VARIATIONS

	Below 5%	Between 5-10%	Over 10%
Dot method as reported	9	2	
Standard method	6	3	1

(Column (3)—Dot-Count Method as it would have been reported if the factor of .5 were used.)

Conclusions

1—The accuracy of the dot-count method of fiber analysis is appreciably increased if factors are applied.

2—Judging from the factors obtained for a number of different soda pulps and a number of different sulphite pulps, the general factors of 0.5 for soda and 1.0 for sulphite are recommended for use with the dot-count method in the analysis of unknown papers made of pulps from unknown sources.

3—Factors were determined for a ground wood pulp and for a sulphate pulp which indicated that an error is introduced unless a factor is applied with the dot-count method.

4—The variations in beating under ordinary conditions will not appreciably change the factors for wood fibers.

5—The variation due to bleaching a pulp is negligible.

6—The variation in source of pulps will cause an error in the determination of less than 5 per cent as a general rule.

7—The personal variable even with the application of a standard factor was found to be the greatest source of error.

REFERENCES

[2] "Paper," May 23, 1917.—Spence-Kraus Method of Fiber Analysis.
[3] Technical Association Papers (TAPPI), June, 1925, p. 66. Pulp Weight Factors. Sub-Committee of Paper Testing Committee.
[4] Technical Association Papers (TAPPI), May, 1929, p. 186. Report on Microscopical Analysis.—C. E. Libby.

Flow Meters and Recorders in the Paper Mill

By H. C. Macaulay[1]

In the purchase of raw materials for mill use, no manager would permit such items as wood, coal, lubricants, sulphur, etc., to be unloaded and charged to mill without first having it carefully weighed or measured, but it often happens although a careful check of coal coming into the plant is made, little attention is given to outgoing fuel in the form of heat or steam.

It is true that in late years more attention has been given to steam plant efficiency necessitating the use of measuring instruments and recorders, comparatively large plants may still be found however, where apparently the only efforts to economize in operating costs have been expended in getting along with the least possible information on operating conditions. A master meter showing the total daily output of steam generated is of course a step in the right direction, and if fuel used is carefully weighed or measured and the fuel value in heat units known the over all efficiency of steam plant is easily obtained. But suppose we have eight or ten or even more boilers in operation and records show that efficiency is not up to where we should reasonably expect it to be, where then shall we start in to correct and improve conditions? Without the aid of individual flow meters on each unit, we are faced with the problem of groping in the dark by taking each unit separately and giving it a thorough inspection in an effort to ascertain the trouble. Even then after much labor and expense we may find that the trouble is due to faulty operation or supervision. Without individual meters, several units may be operating at times much above the desired rating while others as much below that point, with the result that fuel is being wasted. With boilers equipped with individual flow meters such a condition need not exist. Boilers may be operated at the most economical rating at all times, this results in a smaller number of units in service and consequently greater opportunity for cleaning and repairs therefore better general conditions.

Flue Gas Analysis

The matter of analyzing flue gases is something often either entirely neglected or misunderstood. The installation of one automatic flue gas recorder for use with several boilers with the expectation that great improvement will result, is bound to result in disappointment. If each boiler is not equipped with its own flue gas analyzer, it is better to discontinue the use of one such instrument and use a hand instrument instead. The advantage to be gained from the use of a hand instrument, is the fact that operators never know from what unit a gas sample is to be taken and therefore must give equal attention to all boilers. On the other hand with the automatic instrument, it is human nature for firemen when coming on duty to ascertain which unit gases are being taken from and endeavor to obtain a high CO_2 reading on that particular unit to the neglect of all others. Besides conditions are constantly changing so that the time lag which increases with distance between boiler and instrument must receive consideration. The solution of the problem then if highest possible efficiency is to be obtained, is either a separate instrument for each boiler or the use of a hand instrument by some one not directly interested in results obtained.

Another point is often overlooked. It is useless to expect satisfactory performance or improvement due to the use of any flue gas instrument if boiler settings are full of cracks and baffles full of holes that a cat could crawl through. The first step is to care for all known bad conditions and defects, have these corrected then bring the instrument into play to search out the more elusive ones.

Temperature and Pressure Recorders

The use of temperature recorders for recording feed water to economizers also to boilers, are of great value and will pay cost of installing in a very short time. Besides unless we know the temperature of feed water entering boilers we cannot determine boiler efficiency.

The use of temperature recorders in boiler uptakes is obvious. An extermely low temperature will indicate that boiler is operating much below capacity while a very high gas temperature is proof that boiler is being forced, baffles not tight, or that boiler is dirty either inside or out or both. It is of course necessary that at least one pressure recording gauge be connected to the main steam header. Then there are indicating and recording draft gauges, etc.

It is a very great mistake to pay out good money to equip a plant with up-to-date recording instruments, mounted on a nice panel and then lock them up in the operating engineer's office, as is often done. True, such instruments present a pleasing appearance, but are not intended for show purposes. They belong out where plant operators can see and be governed by them if full benefit is to be derived from their use.

Use of Instruments

If it pays to spend money for instruments to insure the greatest possible economy in the generation of the steam, is surely must be true that its distribution and use is also worthy of careful consideration. There is absolutely no object in striving to generate a thousand pounds

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of steam with the least possible cost and then wasting the greater part of it in the pulp or paper mill.

What applies to the steam boilers regarding the use of steam flow meters, applies also to the digesters. Here, too, it is necessary that each unit be equipped with individual flow meters as well as recording thermometers and recording pressure gauges. The practice of installing one master meter from which to obtain the total quantity of steam used from which may be figured the amount of steam per ton of product, is better than nothing, but when it comes to actually bettering conditions it is little better than nothing. If we are content to know where the steam is being used one meter that measures the total quantity is sufficient, but if we hope to improve conditions, we must then know what portion of the total is being used by each individual unit, what method of cooking requires more and what method less per ton of product. This information we should have for every cook, for every day and for every digester. The so-called portable instrument will not answer our purpose.

The primary object in installing flow meters as well as other measuring devices and recorders is to effect economy and operating efficiency. Therefore, when installing meters to measure steam used for drying paper on the paper machines, it is a mistake to so locate them that only the steam actually used in driers is measured. Bearing in mind that the object is to conserve steam, meters should be so installed that steam used for heating the room in which the machine is located, as well as that used for cleaning the dandy roll, fourdrinier wire, cylinders, heating water, etc. is measured, as all these operations bear a direct relation to machine operation and if not measured and charged against machine production are liable to be abused.

Steam used for heating and process work in the different departments should be metered, if we fail to measure we cannot hope to control. It often happens that the quantity used in certain departments or for a certain process does not justify the cost of installing a meter. In such cases it is most always possible to group a number of lines together so as to get the total quantity at least and hence better control.

The fact that an abundance of fresh water must always be available for paper mill work often results in great waste both directly and indirectly. If the quantity of raw water available was limited we would of necessity be compelled to put forth greater effort in the conservation of white water with the result that fiber losses would be less and the cost of filtering and pumping fresh water reduced. A meter on the fresh water supply line will no doubt show that demand does not increase or decrease in proportion to tonnage produced, but fluctuates greatly at all times and varies greatly in amount daily regardless of operating conditions. The greater the volume of water pumped the greater the power required so that when water is wasted power is unnecessarily expended besides adding to the work of the filtering system. It is therefore, evident that a flow meter installed on a fresh water supply line to the paper mill will be a paying investment, for contrary to the general impression of mill workers, this water costs money and should be measured out according to requirements.

The use of recording thermometers in hot air ducts from air heaters or economizers to paper machines is advisable to keep a check on this equipment. A recording thermometer on boiler blow-down line will not only give a record of the number of boilers down and time of blowing, but will also record any leakage due to defective blow-down valves or for other cause. By placing the hand on the different connections it is a simple matter to determine which valve is the offender and what remedy should be applied.

It may not be amiss to mention here that in a great many plants, although everything within reason is done to save steam and prevent its waste, the matter of heated water is not taken very seriously. In the case of blow-down lines, the fact that fuel has been burned to bring the water in boilers up to the temperature of the steam with which it is in contact is often forgotten. Any heat wasted, either through the medium of steam, water, air, or by other means, necessitates fuel consumption to make up the loss.

On water wheels used for driving beaters and jordans if not equipped with governors to control speed, recording tachometers will be found to be of great help, as operators are then able to regulate the speed of the wheel to get proper speed on beaters and jordans. Excessive speed tends to injure equipment and increase maintenance costs.

Liquid level recorders are adaptable to wide application, such as for recording the level of liquids in tanks, height of water in fore-bay and tail race and in many other places where such a record is required.

Fire Protection of Valuable Records

A paper presented by S. H. Ingberg, chief of the fire resistance section of the Bureau of Standards, before the Fifth All-Ohio Safety Congress, directs attention to the necessity of more adequate protection of valuable records from the fire menace, and contains detailed recommendations as to effective protective measures. Some of the more important statements follow.

The vital importance of records is often not appreciated until loss, such as by fire, occurs. Other things of greater apparent intrinsic worth may receive more thought and care as regards methods of handling and safe disposition. Yet on the fact of preservation or loss of records in a destructive fire may depend the decision as to whether or not the establishment will be rebuilt and its business resumed. The high mortality of firms suffering disastrous fires can be traced in many instances to the loss of records forming the basis of tangible and intangible assets. Other property and human values are also involved. Scattered throughout the length and breadth of the land, and indifferently protected, are the public records of birth, marriage, and death, deeds of conveyance and trust, testaments, court decrees, and the multitude of written evidence on which proof of citizenship, legal status, rights, and ownership depend. The loss of these records may mean expensive litigation and deprivation of rights and property that have required a lifetime of effort and sacrifice.

The hazard of loss by fire can be decreased in varying degrees by the application of measures designed to prevent the occurence of fire, to protect records of value from destruction in case fire occurs, and by storing duplicates in a place where they would not be subject to loss by a fire that would affect the original record. Very much more can be done to decrease the fire hazard to record storage by observing well-recognized general principles of fire prevention and protection. This may attain a degree where further protection would not be required except possibly for the most vital records.

One suggestion relative to the handling of charred or partly charred records may be pertinent. The filing cabinets or other containers should be left as far as possible in their original location and the contents of each drawer or compartment extinguished with a minimum amount of water. If this precaution is observed it may be possible to reconstruct a partly charred file of records where it would be totally lost if taken out of its place or container.

Color Specification in the Pulp and Paper Industry*

By W. B. Van Arsdel[1]

The pulp and paper industry has until very recent years been in the position of an industrial art, living by ancient traditions rather than by exact knowledge. Shortly before the opening of this century the application of chemical methods to the production of paper fibers from wood opened up a field of scientific development; some parts of the industry have been revolutionized, while others have undergone little or no change in the past century or more. It has been particularly difficult to introduce exact methods of testing and control of the product, partly, no doubt, because of the vagueness of many of the qualities we value in a sheet of paper. The control of color has been, and still is, in a highly unsatisfactory condition, but in this case not because the desired quality is vaguely defined, but rather for lack of an adequate method of measurement and specification. Color technologists have not clearly understood the requirements of this industry.

TABLE 1—SPECIAL REFLECTION OF BLEACHED WOOD-PULPS

Wave length	Sample number 1	2	3	4	5	6	7	8	9	10
400	686*	630*	718*	635*	855*	590*	582*	793*	783*	658*
420	746*	710	750*	645*	870	630*	617*	828	812	712*
440	820	777	778	655	883	675	657	858	835	764
460	859	810	802	669	893	724	702	883	853	798
480	862	833	823	698	902	752	746	902	867	820
500	868	851	839	740	908	768	782	912	877	838
520	882	865	849	764	914	791	807	918	885	852
540	893	879	858	783	919	801	827	920	892	863
560	898	890	865	794	923	804	845	922	898	872
580	899	898	873	806	926	816	856	927	903	879
600	900	904	880	813	929	829	864	933	908	887
620	902	908	884	817	931	832	873	940	911	894
640	930	911	888	830	934	835	882	944	913	898
660	920	917	892	842	938	844	883	948	915	900
680	909	921	893	845	941	850	883	952	918	906
700	901	824	885	853	943	856	892	955	920	911

* Figures extrapolated.

From the standpoint of manufacturer and user, pulps and papers are two distinctly different classes of material. The problem of color-specification is likely to be quite different in two cases. One obvious general proposition, however, applies to both; colors of high saturation or chroma have only minor importance. A solution of the problem to be of real value must be satisfactory for colors that very nearly approach pure white. Next in importance are the tans and light browns. In one important respect specification of the color of a nearly white pulp is simpler than the general case; the hue is practically invariable. Table 1 gives the spectral reflection data, and Fig. 1 the corresponding spectral reflection curves[2] of ten different wood pulps, the range just about covering the upper and lower limits of bleached pulps. The curves all exhibit a gradual increase in absorption toward the violet end of the spectrum. These reflection factors have been transformed to monochromatic terms by a modification of the method described in the 1920-21 report of the Committee on Colorimetry, the modification consisting in the substitution of the 10000 degree black-body energy distribution for that of noon sunlight. This gives an approximation to the results which would be obtained with north-sky daylight, which is preferred over sunlight for matching the colors of pulp. The results are given in Table 2, and also graphically in Fig. 2, representing a small area near the center of the color-triangle. It is at once apparent that even the yellowest sample lies very close to the white-point, and that all of the results fall

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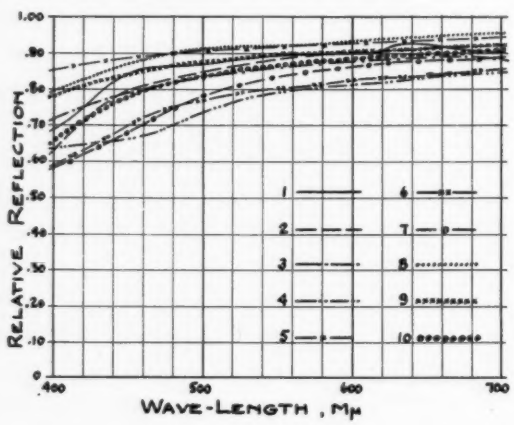

FIG. 1
Diffuse spectral reflections of bleached wood-pulps.

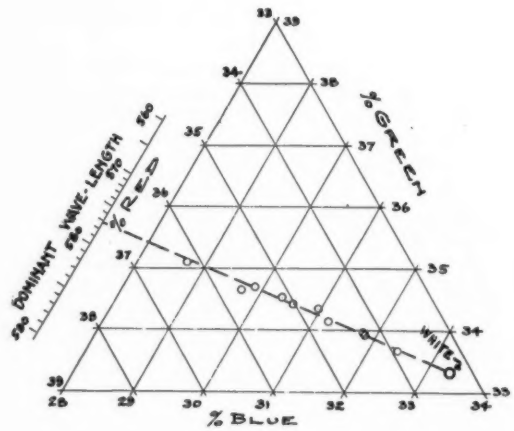

FIG. 2
Coordinates of bleached wood-pulps in color triangle.

TABLE 2—MONOCHROMATIC ANALYSES OF BLEACHED WOOD-PULPS

Sample No.	Arbitrary color-number	Brightness	Purity	Dominant wave-length
1	104.5	0.892	0.104	576
2	100	0.882	0.130	577
3	102	0.861	0.095	578
4	94	0.784	0.158	579
5	109	0.920	0.042	576
6	98	0.802	0.151	577
7	94	0.830	0.198	577
8	107	0.922	0.070	576
9	105	0.894	0.067	578
10	100	0.866	0.122	578

[2] Some of these curves were determined by the Bureau of Standards, others by the American Photoelectric Corporation, of New York.

approximately on the straight line representing the dominant wave length of 577 mμ. There is some evidence that the deepening in color which is a result of aging a sample is accompanied by only a slight reddening of the hue.

It is obvious that the papermaker cannot produce a product which will be any whiter than the pulp he starts with, unless he bleaches the stock further—an expedient which is likely to be fatal to the other qualities of the paper. The pulp manufacturer and the papermaker are therefore both highly interested in the color of the pulp, and they are accustomed to judging chiefly the amount of yellow present, practically ignoring differences in total brilliance. There is a good reason for this custom, entirely apart from the fact that in the old standard grades of papermaking pulp high yellowness is quite likely to accompany a low brilliance. This reason is that a blue dye or pigment is added to the stock in the beater to neutralize the yellow tint, and the more of this constituent is used, the darker the finished paper will be.

Direct visual observation may be surprisingly accurate and reproductible in the hands of an experienced man. Apparently it is possible to train the color-memory so that one man can check his previous grading very well from day to day; it is far more difficult, of course, to secure conformity of results between different observers. One device which is frequently employed to increase the precision of non-instrumental grading involves partly splitting a sheet of pulp, and spreading the two sides apart slightly so as to form a deep, narrow *V*; multiple reflection between the faces of the *V* intensifies the yellow constituent of the color so much that even the whitest pulps will show a pale straw-yellow color in the apex of the *V*.

The demand for reproducibility naturally led to attempts to prepare permanent material color standards, and in 1916 the Sulphite Pulp Committee of the Technical Association of the Pulp and Paper Industry proposed a system which in modified form has been fairly satisfactory.[3] Six flat disks, each about eight inches in diameter, were supported side by side in bearings in a long horizontal frame. A small motor rotated all of the disks simultaneously by means of a continuous belt. The recessed faces of the disks were filled with six different plaster mixtures made up by the formulas in Table 3 and numbered arbitrarily from 75 to 100.

Disks of pulp 3½ inches in diameter were attached to the faces of the wheels so as to be whirled with them. The entire series of wheels was illuminated by a standard "daylight" lamp or battery of lamps. The pulp was then specified by the number of the wheel it most closely matched. There were several very valuable features in this machine; in the first place, the whole series was in the field of view at once, permitting deliberate re-check of the first judgment; secondly, the samples were fairly large and were brightly illuminated, thus achieving high sensitivity; and finally, the plaster color-standard could be scraped clean with a sharp tool whenever it became dirty. Surface inequalities of the sample were eliminated by the rotation. The operation of grading was very rapid, and permitted fairly good checks between different observers. On the other hand, the soluble potassium chromate had a

[3] *Testing Pulp for Color and Strength*, R. B. Wolf, *Paper* 19, No. 9, 11-19; Nov. 8, 1916.

FIG. 3
Sectored disks used for matching color of bleached pulp.

TABLE 3

No. of wheel	Water	Plaster of paris	Potassium chromate	Powdered magnesia
100	120	107	0	20
95	120	107	0.0245	20
90	120	214	0.1490	0
85	120	214	0.4660	0
80	120	214	0.6120	0
75	120	214	0.7770	0

tendency to accumulate at the surface during the setting of the plaster, so that when the surface was scraped off the resulting tint was lighter than it should have been. In addition, commercial plaster of paris was found to be far from constant in color. Work done in the Brown Company laboratories finally led to the following modification. Pure plaster of paris was prepared by precipitation and ignition under carefully controlled conditions; the resulting plaster was so white that no magnesia was needed, even for the highest-numbered wheels. The yellow color was secured by the use of precipitated zinc chromat, and this was applied as a definite sector of the wheel instead of being mixed with all of the plaster; a mixture of equal parts of the chromate and the plaster was found to give a sufficiently hard surface, almost as saturated in yellow as the pure chromate itself. The wheels were mounted on individual motors for quietness and conveniences; all were set on a high table, level with the eyes of the observer, and a row of six ten-inch Macbeth Daylighting units above the observer's head gave high and uniform illumination. See Fig. 3. The arbitrary numerical scale was also changed somewhat; the pure white wheel, if one were used, would be No. 117, and the number decreases by three units for each seven-degree sector of yellow introduced. From seven to eight wheels are commonly used, ranging in three-point steps from 93 to 111. Experienced color graders will check one another's results on sulphite pulps within two points, and any one man can usually check his own readings within one point.

The system just described operated well enough on bleached sulphite wood pulps, but when advances in manufacturing processes brought forth new types of highly purified wood fiber, partly originating from kraft instead of sulphite pulp, the color wheels were soon found to be inadequate. The wheels obviously present a single-variable system, brilliance and saturation not being independently variable. Some of the new pulps failed to match any of the wheels satisfactorily; in some cases, for instance, the saturation of yellow was very low indeed, but the brilliance was so low that the pulp was distinctly gray. Different observers would differ in their grade for such a pulp by as much as five or six points. It is evidently necessary to allow independent variation of both saturation and brilliance if the specification is to be satisfactory. Of course if it is desired to use the same system for kraft and unbleached pulps, it is necessary also to extend the range of saturations to a much higher value, and that of brilliances to a much lower value, than was described above.

The zinc chromate used as a yellow pigment has not been entirely satisfactory, since it is subject to some change in color from the effects of the usual laboratory fumes of ammonia, sulphur dioxide and chlorine. Further experiments are now under way with a yellow ochre of easily reproducible source; this pigment appears to be much more stable, and has excellent tinting strength in the plaster mixture.

It will be of interest to examine the relation between the arbitrary color-number of white pulps and the colorimetric purity as calculated from the reflection curves. Fig. 4 presents this relation graphically. While the correlation is not perfect, it is evident that the color grading on the wheels actually is a fairly good measure of the yellow saturation. The slope of the line indicates that a trained observer can just barely discriminate between two merely white samples differing in purity by about 0.9 per cent.

So far as we are aware, no one has yet devised a satisfactory set of material standards for white papers. In general, it would be very difficult to do so, except perhaps for a small number of standard brands which it was desired to reproduce frequently. The first difficulty is that the hue may be anything, from red to violet, since a small amount of red dye is frequently used with the blue in the beater. In the second place, differences in translucency and surface finish would make it very difficult to attain really satisfactory color-matches. Table 4 and Fig. 5 present the spectral reflection curves[4] of three high-grade papers, one yellowish, one nearly neutral and the third bluish in hue. All of these samples were practically opaque and the surfaces were matte rather than glazed. There is evidently need for careful definition of what is meant by the color of a paper, since only a fraction of the incident light—and sometimes only a small fraction—is diffusely reflected. Specification of the fractions specularly reflected, diffusely reflected and transmitted and of the spectral composition of each fraction would give the complete story, but would probably fail to satisfy the papermaker. His manner of matching two samples of paper visually it to fold the sheets twice, so that four thicknesses are superimposed, and then, holding the samples side by side, tipping them this way and that, to look for differences in appearance which may show up at only one particular angle and not at others. Of course the color of a highly translucent paper such as glassine can be satisfactorily specified only by the inclusion of data on the transmitted light.

Actually, the paper industry has no means of specifying the color of its product except roughly by the use of such color-names as white, buff, cream, rose or dandelion. When a customer is more exacting, he is likely to submit a sample of paper and ask to have it matched. The papermaker will protect the sample from heat and light, but he realizes perfectly well that it is not a permanent standard.

[4] Used by courtesy of the American Photoelectric Corp.

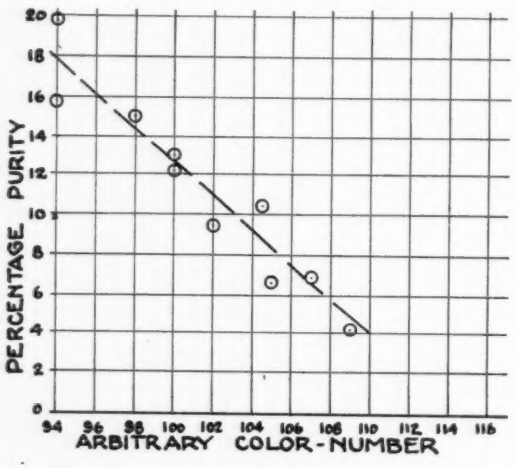

FIG. 4
Relation between colorimetric purity and arbitrary color-number of bleached pulp.

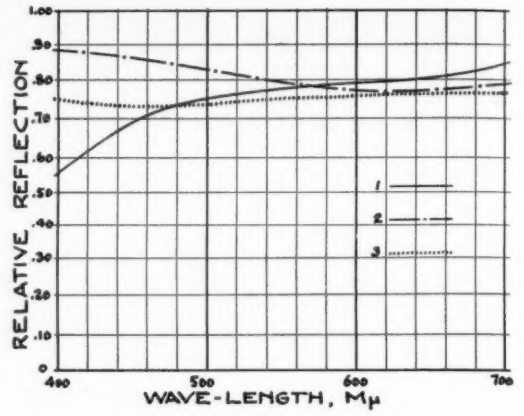

FIG. 5
Diffuse spectral reflection of "white" papers.

The above considerations indicate that a method of colorimetry which would fully satisfy the requirements of the pulp and paper industry must fulfill the following conditions:

1. It must be at least as sensitive, particularly to differences in saturation, as the skilled human eye is under the conditions of best seeing.
2. Its standards must be reproducible at different times and in different laboratories.
3. It must be fairly rapid; to be really satisfactory for routine work, the final results should be available within a minute.
4. Allowance must be made for differences in the translucency and surface texture or finish of the samples.
5. While not absolutely essential, it is very highly desirable that the results should be expressed in the monochromatic terms of dominant wave length, purity and brightness.

In the light of these conditions many well-known colorimetric methods are seen to be unsuitable. Determination of diffuse spectral reflection, in the form of either a tabulation or a curve, fails to express the results in usable form; transformation to monochromatic terms is possible by a laborious arithmetical process, but the time required is impossibly long, and the precision is not all that it might be. The mechanical integrating device proposed[5] by A. C. Hardy would overcome the time difficulty, but it is hard to believe that it would be sufficiently accurate. A method for specifying the color of

TABLE 4—SPECTRAL REFLECTION OF "WHITE" PAPERS

Wave length	Sample number 1	2	3
400	558*	884*	745*
420	618	876	739
440	668	866	733
460	709	854	730
480	734	842	729
500	750	829	735
520	763	814	743
540	772	800	747
560	780	788	750
580	787	778	754
600	791	771	758
620	796	769	761
640	800	770	763
660	809	772	764
680	826	779	765
700	846	790	765

* Figures extrapolated.

[5] *A Recording Photoelectric Color Analyser.* J.O.S.A. *18*, 2, 116-117; Feb. 1929.

butter was described in 1917 by Priest and Peters[6], involving determination of the reflection factor at only two wave lengths, 578 and 436 mμ; the lower the ratio of the second to the first, the yellower the sample. While the result is not identical with the colorimetric purity, it does correlate well with visually graded colors of bleached pulp; the most obvious objection is that a minor change in the shape of the reflection curve might alter the appearance of a sample without changing this ratio at the two chosen wave lengths. Most of the work on the colorimetry of paper has been done with some instrument utilizing the three-color principle—for instance, the Ives tint photometer, the Eastman colorimeter or the Pfund colorimeter. The latter introduced the important concept of specifying a color which closely approaches white only after intensifying its saturation by multiple reflection. Any three-color instrument, however valuable it may be in a laboratory investigation of, say, bleaching or color reversion, suffers from the very serious drawback that the results cannot be easily and certainly correlated with the appearance of the sample. Attempts have been made to develop a Maxwell disk with independently variable sectors of black and yellow, but the difficulties have so far been insurmountable. Of all the possibilities, the most promising seems to be the monochromatic colorimeter as described by Nutting[7] and by Priest,[8] but there is no evidence to show whether the requirements of reproducibility, precision and speed can be met. The definition and attainment of a standard white light-source is also one of the troublesome problems. It is possible that the very considerable expense of such an instrument can be materially reduced by eliminating the spectroscope and using instead one or more glass or liquid color-filters. The sensitivity might well be increased by arranging for multiple reflection from the face of the sample; in fact, Pfund pointed out[9] that this type of instrument lends itself admirably to monochromatic colorimetry; but it should first be determined whether the intensification factor can be made independent of differences in surface gloss and roughness. Is it probable that the sensitivity could also be increased by the use of a high level of illumination and wide-angle field,

Even if the physical data determining the color of a sample of pulp are precisely enough measured, however, the color technologist needs certain other data on color-vision to complete the specification. For instance, the scale of pulp colors should correspond to equal steps of saturation, but the relationship between colorimetric purity and saturation has been determined for only a few individuals under a few of the many possible conditions. Again, the physical and psychological factors underlying the use of "blueing," in the laundry as well as in the paper mill, need to be better understood. The paper-maker says he adds blue "to brighten up the stock," although obviously he is darkening it; he generally brings his paper well over onto the blue side, thus darkening it more than would seem to be necessary. For this purpose he may use a blue pigment or a blue dye, or both, and since the dye is likely to give a greenish tinge by subtractive color mixing, a little red dye is often added too. The red is used, like the blue, "to brighten up the color a little more." The psychology of this practice should be investigated. Since the final criterion of the color of paper can evidently be nothing but its brilliance or physically its brightness, it should be possible to translate the two variables determined on the original pulp—percentage purity and percentage brightness—into a single composite figure representing the highest brightness of a neutral gray paper which can be made from that pulp. Such a figure would be the best possible specification, and a sufficient specification, for the color of a paper-making pulp.

[6] Bur. Stds. Technologic Paper No. 92; June 30, 1917.
[7] Bull. Bur. Stds. *9*, 1-5, 1913. (Reprint No. 187).
[8] J.O.S.A. *8*, 173-200; Jan. 1924.
[9] Proc. Am. Soc. Test. Mat. *20*, II, 441; 1920.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

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Bleaching

Study on the Bleaching of Kraft Pulp. Otto Kress and Roy L. Davis. Paper Trade J. 94, No. 11: 34-40 (March 17, 1932).—The optimum conditions for bleaching this grade of pulp were found to be: (1) first stage with chlorine gas or chlorine water equivalent to 50% of the total bleach consumption; (2) wash with water and treat with 1% caustic soda (on the weight of the pulp); (3) second bleaching stage with enough hypochlorite to produce the desired white.—A. P.-C.

Alkalinity in Bleaching. F. H. Yorston. Pulp Paper Can. 33: 74-77 (April 1932).—By keeping the bleach liquor alkaline throughout the process, a stronger pulp can be obtained and equivalent color is obtained with a lower bleach consumption. It is preferable to maintain the alkalinity, by buffering, at a pH of about 9 which is equivalent to 0.00001 normal. Details are given of rates of bleaching and pulp properties for a series of bleaches made at about this alkalinity, using magnesia as buffer.—A. P.-C.

Control of the Consumption of Chlorine in the Bleaching of Pulp. Zellstoff Papier 12, No. 1: 21 (Jan. uary, 1932).—According to a Russian authority the Sieber number is the best method of control. The quickest way to determine the degree of decomposition of the pulp is

by means of microscopic tests. Fuchsine is recommended for this purpose. These tests should be made before the stock enters the bleach beaters.—J. F. O.

Bleachability Values. Zellstoff Papier 12, No. 1: 12 (January, 1932).—A table is presented which gives comparative values for bleachability by the various ordinary methods, such as, Bergman, Enso, Tingle, Parsons, Bjorkman, Johnsen and Roschier.—J. F. O.

Bleaching with Calcium Hypochlorite and Sodium Hypochlorite. Fotijew, Masjukow and Utkin. Zellstoff Papier, 12, No. 1: 22 (January, 1932).—If the bleaching is done in a neutral solution, the chlorine consumption is 10 to 30 per cent less than in an acid solution, but the time of bleaching is considerably greater. In multiple stage bleaching there is a saving in bleach. Pulp for artificial silk should be bleached with calcium hypochlorite in the first stage and sodium hypochlorite in the second stage. Liquid chlorine can be used without disadvantage in either case.—J. F. O.

Preparation of Bleaching Liquors. Solvay et Cie. Fr. pats. 711,369 and 711,370 (Feb. 16, 1931).—*No. 711,369*—A calcium hypochlorite bleaching liquor is made in a continuous manner by passing chlorine and slaked lime diluted in a large amount of finished liquor through a long worm. The mixture of milk of lime with the finished bleaching liquor and the evacuation of the finished liquor takes place in the same vessel at the exit of the worm. *No. 711,370*—Dilute bleaching liquor ready for immediate use is prepared by introducing chlorine into a solution of sodium carbonate until the proportion between the fixed chlorine and the amount of sodium carbonate treated is in the ratio of 1 molecule of sodium carbonate to 1 to 2 molecules of chlorine.—A. P.-C.

Process for the Bleaching of Pulp. Erik Hagglund, Abo, Finland. Ger. pat. 544,967 (June 22, 1927).—The beaten up stock is treated with chlorine, followed in the same reaction stage by hypochlorite, for example, calcium hypochlorite, then freed from acid and finally after-bleached. For example, a pulp containing 10 per cent lignin and which is obtained from pine wood by decomposition with sodium sulphate is treated in the beaten condition with 10 per cent of chlorine gas, figured on the dry weight of the pulp, and this is allowed to react for a half hour. Then 2 per cent more chlorine gas is added in the form of calcium hypochlorite and the reaction is allowed to continue for 2 hours with continuous stirring. The stock is then washed with water and then with a little alkali and finally 3-4 per cent more chlorine is added in the form of calcium hypochlorite for the after-bleaching.—J. F. O.

Multiple Stage Bleaching with the Use of Elementary Chlorine. Roland Runkel. Papier-Fabr. 29, No. 51/52: 830-833 (Dec. 22, 1931).—The author recommends the use of chlorine water instead of calcium hypochlorite solution for the first stage in the Thorne tower system of bleaching, because time is saved and the yield of stock is somewhat higher. The bleaching with chlorine gas on a moving belt is not yet technically perfected. The Verein fur Chemische Industrie A. G. has built a patented apparatus which can be used in conjunction with bleach beater, and in the first stage of bleaching the water in the beater can be regulated by means of the washing drum and by means of an injector pump the chlorine gas can be added. The gas and liquid are mixed in the beater. The saving over the use of calcium hypochlorite is 18 per cent of chlorine and 35 per cent of chemicals. For the last stage, chlorine gas is added to the stock which is itself mixed with lime water or sodium hydroxide.—J. F. O.

Process for the Bleaching of Pulp, Ground Wood and Similar Materials are Conveyed Through a Pipe Line by Means of Compressed Air, and the Arrangement for This. Fa. J. M. Voith, St. Polten. Czech pat. 37,443.—The bleach liquor is introduced into the conveyor line for the pulp, the quantity of bleach added is automatically regulated by the quantity or pressure of compressed air.—J. F. O.

Sizing

Sizing Paper Containing a Carbonate Filler. Harold R. Rafton assignor to Raffold Process Corp. U. S. pat. 1,819,441 (Aug. 18, 1931).—The invention consists essentially in the use of a stable paraffin emulsion in conjunction with alkaline fillers such as calcium carbonate, calcium carbonate magnesium hydroxide, etc., with or without the use of starch and (or) alum, but without addition of rosin. It is claimed that a complex is formed between the paraffin and the alkaline filler, giving a true sizing effect entirely different from the effect obtained by the usual paraffin coating or impregnating process.—A. P.-C.

Paper. Edwin Sutermeister and Joseph A. Warren assignors to S. D. Warren Co. U. S. pat. 1,838,969 (Dec. 29, 1931).—In the manufacture of filled and sized paper, there is used as a filler an alkaline compound of an alkaline-earth metal, such as calcium carbonate, in association with emulsified paraffin and rosin as size.—A. P.-C.

Filled and Sized Paper. Edwin Sutermeister and Joseph A. Warren assignors to S. D. Warren Co. U. S. pat. 1,839,449 (Jan. 5, 1932).—As a filler there is employed an alkaline-earth metal carbonate, such as calcium carbonate, the particles of which are coated with a reaction product such as that formed by treating the carbonate with an emulsion of a fatty acid compound; and rosin is employed as sizing.—A. P.-C.

Sizing Paper Pulp. Haarlan Paperitehdas Asakeytio. Fr. pat. 713,421 (March 17, 1931).—Paper pulp is sized by liquids obtained by saponifying rubber or gutta-percha with bases. The sizing liquid may be precipitated by alum, etc.—A. P.-C.

Sizing Paper. Herbert P. Pearson assignor to Stanco, Inc. U. S. pat. 1,842,122 (Jan. 19, 1923).—There is incorporated in paper pulp, prior to its formation into paper sheet, an emulsion of solid petrolatum.—A. P.-C.

Sized Paper. Gerould T. Lane assignor to Eastman Kodak Co. U. S. pat. 1,840,399 (Jan. 12, 1932).—There is precipitated on the fibers a sizing from a soap of a saturated fatty acid containing more than 9 carbon atoms and purified to such an extent that its iodine number is less than 40, such as commercial stearic acid, which may be used with aluminum sulphate.—A. P.-C.

Fillers and Coating Materials

Treating Kaolin for Use in the Paper Industry. Rudolf Illner and Camillo Fürst. U. S. pat. 1,840,363 (Jan. 12, 1932).—Crude kaolin is "coagulated" with milk of lime, then neutralized with sulphuric acid of a strength of 60 deg. Baumé; powdered sodium hyposulphite is added in the proportion of about 0.1% the amount of dry kaolin, together with about 0.2% of sulphuric acid of 60 deg. Baumé, while stirring for about 30 to 60 min. The material is then neutralized with milk of lime (an excess of about 0.1% calcium oxide being used), with further stirring for about the same length of time. A small proportion of coloring material such as an indanthrene dye is then added, followed by stirring, pressing and drying.—A. P.-C.

Coating or Sizing Composition. Charles R. McKee assignor to American Hair and Felt Co. U. S. pat. 1,827,-

822 (Oct. 20, 1931).—An aqueous viscous adhesive coating is made from glue, starch, sulphite waste liquor and a small quantity of a sulphonated oil such as Turkey-red oil.—A. P.-C.

Production of Coated Paper. Donald B. Bradner asignor to The Champion Coated Paper Co. U. S. pat. 1,838,358 (Dec. 29, 1931).—A substantial excess of an equeous coating mixture, such as a casein-clay-water mixture, is applied to a traveling web of paper, excess coating is removed by a special doctor so as to leave a smooth coating of the desired weight, and the coated paper is dried.—A. P.-C.

Calendering Coated Paper. Raymond A. Steffen assignor to The Champion Coated Paper Co. U. S. pat. 1,842,848 (Jan. 26, 1932).—A coated side of the paper is subjected to frictional contact with the surface of the paper itself in a roll-system which is described.—A. P.-C.

Coating Composition. Gerald H. Mains assignor to Westinghouse Electric and Manufacturing Co. U. S. pat. 1,841,138 (Jan. 12, 1932).—A reaction product of furfural with a phenolic compound is used with a solvent and a solution of China wood oil in furfural in such proportions that paper sheets impregnated with the composition and subsequently dried will not adhere to one another at ordinary temperature, but will be free from dust and suitable for molding.—A. P.-C.

Coated Paper. Peter Spence & Sons, Ltd. Belg. pat. 381,644 (Aug. 31, 1931).—The paper is coated with a color or enamel composed entirely or partially of finely-divided, close-textured, anhydrous calcium sulphate.—A. P.-C.

Cylinder for Paper Coating Machines. Charles W. Mayer. U. S. pat. 1,827,562 (Dec. 22, 1931).—In order to maintain uniform temperature distribution in heated or cooled cylinders used on coating machines, a frustro-conical drum is placed inside the roll with its larger end adjacent the outlet of the roll. Blades are associated with the large end of the drum to facilitate circulation of the heating or cooling medium through the roll.—A. P.-C.

Method of Applying Coating to Paper. Carl Munch assignor to The Champion Coated Paper Co. U. S. pat. 1,847,065 (Feb. 23, 1932).—The coating composition is applied to the surface of a partially immersed rotating roll, and is transferred to the stock to be coated which, at the point of contact of the two surfaces, is moving in the opposite direction to the roll.—A. P.-C.

Treatment of Aluminum Silicate and Similar Mineral Substances Which are Used as Filling Material in the Paper Industry. N. V. Amsterdamsche Maatschappij voor Industrie en Handel, Wien. Ger. pat. 542,831, (Nov. 10, 1929).—In order to improve the size of the particles, dispersion property, the speed of settling, etc, the aluminum silicate and similar materials are mixed as a slurry with at least two soluble substances which form difficultly soluble salts. The resulting substance is filtered off and dried and consists of particles which are all of the same size and which remain so when the filler is made into a slurry. For example, a clay slurry which has been obtained by mechanically mixing and coagulating it with aluminum sulphate and shows a specific gravity of 1.4 is treated with ½ per cent of sulphuric acid (figured on the dry weight of the clay) and the slurry is then neutralized with dissolved lime, filtered and dried.—J. F. O.

Dyes and Dying

Cellulose-Dyestuff Complex. I. Structure of Cellulose Fibers. J. M. Preston, J. Soc. Dyers Colourists 47:312-319 (1931).—Anisotropic properties of cellulose structure have found adequate explanation in Naegali's micellar theory. The ratio of the absorptions of light (expressed as densities) at any given wave length, when the vibration of the light is parallel and perpendicular, respectively, to the long axis of the fiber, is found to be a constant called the dichroic constant. From theoretical results it is deduced that the dichroic constant is a function of the degree of orientation of the cellulose structure. The degree of orientation is expressed in terms of the dichroic constant. Tension applied to the long axis of a fiber during dyeing and drying is found to increase the dichroic constant in slightly oriented structure.—A. P.-C.

Process for the Manufacture of Paper with Colored Designs. Stephan Furth. Vienna. Aust. pat. 124,741 (May 15, 1931).—The object of the invention is to impart designs and symbols of all kinds on to a sheet of paper, but not all at the same time. The components of the coloring matter is so divided that a part is mixed with the paper and stock and the remainder at the place desired, and in this manner the design is more firmly fixed since it is incorporated with the fibers themselves.—J. F. O.

Process for the Coloring of Paper, Board and Similar Substances by the Use of Basic, Substantive or Similar Dyestuffs. I. G. Farbenindustrie Akt. Ges., Frankfurt a.M. Aust. pat. 124,748 (May 15, 1931).—The stock is treated during its preparation or before or simultaneously with the addition of dyestuffs with artificial tanning matter of the formula R-X-R wherein R is an aromatic derivative and X is a CH_2, $CH_2.NH$ or sulphur.—J. F. O.

Process for the Coloring of Paper. I. G. Farbenindustrie Akt. Ges., Frankfurt a.M. Ger. pat. 543,634 (June 24, 1928).—It was found that the sulpho acids obtained from the higher molecular diaryl amino benzoquinone, for example dinaphthyl amino-benzoquinone, by heating in high boiling solvents, or obtained from 1 4 benzoquinone after special treatment, is a very valuable paper dyestuff.—J. F. O.

Process for the Preparation of Colors Fast to Water, for the Printing on Finished Paper. Gesellschaft fur Chemische Industrie, Basel. Ger. pat. 540,499 (March 14, 1930).—The coloring, that is the printing with dyestuffs soluble in water is carried out in the presence of one-sided mono or diacylated diamines, that is their ammonium bases. The paper is first treated with the water soluble dyestuff and then with the one-sided mono or diacylated amines or their ammonium bases, or the process may be carried out in the reverse manner.—J. F. O.

Driers and Drying

Discussion of Some Paper-Drying Principles. E. G. Drew, Pacific Pulp & Paper Ind. 6, No. 2: 18-21 (Feb. 1932).—A brief explanation of the principles of the Grewin drying system, as applied to the drying of light papers, bringing out the merits of the system.—A. P.-C.

Drier for Paper Machines. Harry E. Holcomb assignor to Fiberfraks, Inc. U. S. pat. 1,844,658 (Feb. 9, 1932).—The paper is led into a chamber provided with sets of upper and lower rolls over which the paper is trained in a series of alternating U and inverted-U bends. Vertical baffles extend into both the U and inverted-U bends of the paper, and air is blown from opposite sides of the web around the baffles.—A. P.-C.

Modern Paper and Board Driers. J. Duchaillut. Papeterie 54: 182-190 (Feb. 25, 1932).—A brief description of modern, hot-air driers, both of the festooning type and for handling sheets.—A. P.-C.

Nomographic Solution of Paper-Drying Calculations. D: S. Davis, Paper Ind. 14: 36 (April, 1932).—A. P.-C.

Evaluation of Paperboard Drier Performance. F. C. Stamm. Paper Trade J. 94, No. 17:42-44 (April 28, 1932).—After presenting a standard formula for comparing the drying work on various machines, the effect of the variables entering into the problem of drying are analyzed, and an attempt is made to standardize the performance and drying operation of board machines. Finally, a formula is suggested giving the relative effect of steam pressure on the work done in a drier.—A. P.-C.

Drier for Boards. Richard C. Moore assignor to The Coe Manufacturing Co. U. S. pat. 1,834,962 (Dec. 8, 1931).—This invention is an improvement of Vance's U. S. pat. 1,656,802, of Jan. 17, 1928, and provides various structural features to ensure sturdiness and simplicity of construction.—A. P.-C.

Apparatus for Drying Sheets of Wallboard. R. C. Moore assignor to Coe Mfg. Co. Brit. pat. 340,510 (Feb. 16, 1929).—In a drying apparatus, a circulation of the drying medium such as air is effected so as to maintain a positive pressure at the discharge end of the apparatus and a negative pressure at the charging end, to prevent leakage as the material treated passes between rolls and through aligned apertures.—A. P.-C.

Arrangement for the Drying of Pulp, Ground Wood and Similar Materials in the Form of Plates, by Means of Hot Air. G. Siemelkamp & Co., Krefeld, Ger. pat. 546,991 (Oct. 28, 1930).—The pulp, ground wood or similar material in the form of a band is cut into plates before the drying, and is then dried, not by coming in contact with hot surfaces but by means of hot air directed onto the plates.—J. F. O.

Drying Drum for Webs of Paper, Filtered Material and Similar Materials. Maschinenfabrik Imperial G.m.b.H., Meissen. Ger. pat. 531,605 (July 12, 1929).—Along the inner circumference of the drum, separate chambers are arranged with individual steam pipes all connecting to a main line at the axis of the drum.—J. F. O.

Device for the De-Watering and Thickening of Prepared Straw Stock, and Similar Materials, for Cooking. Carl Leyst, Berlin. Ger. pat. 534,058 (June 2, 1927).—J. F. O.

Process for the Drying of Paper, Board and Similar Webs. Fredrik Grewin. Sweden. Ger. pat. 530,021 (July 23, 1925).—Along each side of the drying section is an air line with connections so that warm air can be blown between the drying cylinders.—J. F. O.

Loft Dryer for Webs and Sheets of Paper. Aubin Lambrette, Membach, Belgium. Ger. pat. 536,645 (Jan. 31, 1928.)—J. F. O.

Process and Arrangement for the Removal of Moisture from Sheets of Paper Stock, Moist Paper, Moist Carton, Moist Board and Similar Materials, on a Paper Machine. Edward Tasker, Brentwood, England. Ger. pat. 540,498 (Oct. 6, 1926).—Superheated steam is conducted in an oblique direction onto the sheet and the steam formed is removed from the top of the sheet.—J. F. O.

Process for the Drying of Board Slabs and Other Plate Shaped Bodies. "Reform" Gesellschaft fur Heiz und Trockenanlagen m.b.H., Gorlitz. Ger. pat. 540,821 (April 23, 1929).—J. F. O.

Arrangement for the Continuous De-Watering and Bleaching of Pulp and Other Fibrous Materials. I. G. industrie Akt. Ges., Frankfurt, a.M. Ger. pat. 541,518 (Dec. 12, 1929).—The pulp is first de-watered by passing it over a wire and suction rolls, and it then is carried over a fourdrinier section where bleach liquor of at least 10 grams of active chlorine per litre is sprayed. The sheet of pulp is then reversed and again passed over a wire section where it receives another spraying of bleach liquor. The sheet is then washed after the bleaching.—J. F. O.

Lay Boy for Pulp Dryers or Similar Machines. Maschinenfabrik zum Bruderhaus, Reutlingen. Ger. pat. 515,457 (July 4, 1926).—J. F. O.

Pulp and Paper Testing

Preparation of Liquid Analytical Reagents. Anon. Paper Trade J. 94, No. 9: 27-28 (March 3, 1932).—A description of the tentative official standard TAPPI methods for preparing liquid analytical reagents.—A. P.-C.

Technical Association Testing Division. Anon. Paper Trade J. 94, No. 11: 32-33 (March 17, 1932).—An outline of the work of the testing division of TAPPI.—A. P.-C.

Ink Resistance of Printing Papers. B. L. Wehmhoff. Paper Trade J. 94, No. 13: 39-42 (March 31, 1932).—A brief review of the work recently carried out at the Government Printing Office, Washington, on news print and news ink relative to "show through," "strike through," "flying" ink, carbon black and lamp black as ink pigments, grinding of news inks and factors affecting the printing qualities of news print.—A. P.-C.

Determination of Copper Number in Paper. Anon. Paper Trade J. 94, No. 14: 42 (April 7, 1932).—A description of the tentative official standard TAPPI method.—A. P.-C.

Determination of Alpha-Cellulose in Paper. Anon. Paper Trade J. 94, No. 9: 34-35 (March 3, 1932).—A description of the technic of the tentative official standard TAPPI method.—A. P.-C.

Determination of Total Acidity of Paper. Anon. Paper Trade J. 94, No. 9: 35 (March 3, 1932).—A description of the technic of the tentative official standard TAPPI method.—A. P.-C.

Paper Permanency as Related to Sizing and Acidity. Jessie E. Minor. Paper Ind. 13: 1421 (March, 1932); Pulp Paper Can. 33: 26 (March, 1932).—For papers aged in the presence of light and city atmosphere, the rosin content is a prominent factor in degradation, while the amount of tub sizing with animal size is equally prominent in its protection; but the acidities of such similarly degraded papers bears no relation to the loss of folding strength.—A. P.-C.

Report of Paper Testing Committee. Anon. Paper Trade J. 94, No. 9:36-37 (March 3, 1932).—An outline of the present status of the work being carried out by the various sub-committees of the TAPPI Paper Testing Committee.—A. P.-C.

Effect of Moisture on the Loading Content of Paper. Anon. Papeterie 54: 294-298 (March 25, 1932).—A brief discussion bringing out the importance of taking into consideration the moisture contents of the paper and of the original loading materials when determining the loading content of paper by incineration.—A. P.-C.

Newsprint and Ink Penetration. H. Andrews. Can. Chem. Met. 16: 64 (March, 1932).—A brief discussion of the factors affecting "strike through" and "show through" of printing ink on news print.—A. P.-C.

Pulp Consistency Variables in Pebble Mill Test. F. C. Peterson and Frank Makara. Paper Trade J. 94, No. 14: 35-38 (April 7, 1932).—Results of a preliminary investigation of some of the variables relating to the test are reported and discussed.—A. P.-C.

Forming and Testing Pulp Sheets. Anon. Paper Trade J. 94, No. 12: 35-41 (March 24, 1932).—A description of the technic of the tentative standard TAPPI method.—A. P.-C.

SECTION OF THE
COST ASSOCIATION OF THE PAPER INDUSTRY
Affiliated with
THE AMERICAN PAPER AND PULP ASSOCIATION
Edited by Thos. J. Burke C.A. Sec.-Treas.

The Challenge To Business

By Carl P. Dennett[1]

There can be no serious doubt of a full recovery of normal business conditions in the United States ultimately. When this will occur it is impossible for anyone to accurately estimate at this time, but that it will occur is beyond any reasonable doubt. The fundamental strength and natural resources of this country, its commanding financial position, the ability and resourcefulness of its people, plus the consumptive requirements of one hundred and twenty-five million people, make ultimate recovery certain.

Our greatest difficulty is that, instead of casting aside at once sectional differences, blocs, insurgency and politics and presenting a united front as we ultimately will, and directing ourselves back to prosperity, we are muddling along wasting precious time over trivialities, sectional differences and politics, in a period when the whole country should be united upon the one major problem of taking the quickest necessary steps to insure a return of prosperity, thus absorbing back into industry the unemployed and making them an asset instead of a liability.

Have Assured Jobs

Public employees have assured jobs. They are not subject to lay-offs. They have full-time employment, retirement pensions, and none of the risks of industrial workers. Why should they be the only class to be exempt from deflation? Possibly the fact that 136 members of the United States Senate and House have members of their families even to the third generation on the public payrolls, plus a large number of appointees, has some bearing on the question. There are 617,000 civil employees on the payroll of the Federal Government, and political cowardice is proverbial. It should be borne in mind that Government employees are organized, taxpayers are not.

As to failure of State Legislatures and other municipal groups to reduce salaries and wages, I can conceive of no reason except politics, and under any circumstances none of these bodies are true to the trust reposed in them to act for the interests of all of their constituents in failing to meet these issues.

As a cure for our difficulties all sorts of unsound panaceas have been offered, and some are now pending, based upon enormous borrowings and expenditures of funds, on which the interest and principal can be paid only by levying further heavy taxes upon the people. Our representatives in Congress regard the Treasury of the United States as a town pump out of which dollars can be produced at any time for any purpose. They are oblivious to the fact that even town pumps go dry in a drouth.

Spent Our Way Into Deficit

We spent our way into a deficit—we can not spend our way out. All taxes must ultimately come out of what is taken from the ground, the air or the sea, and the labor involved in preparing these products and transporting them for consumption; or, in other words, taxes go back to raw materials and the labor involved in their production, preparation and transportation. When taxes are increased, the profit is reduced. The price of labor and the price of raw materials all successively suffer their part of the burden. An advance in taxes means a reduction in cost or an advance in price which in turn is paid by the ultimate consumer. The only alternative is the destruction of the industry. If the ultimate consumer will not pay the increased cost (which he must do if it is a necessity), or if labor or the raw materials will not stand the burden, then the industry is destroyed, and labor loses its occupation. "The power to tax is the power to destroy."

If by any form of taxation it were possible to confiscate existing wealth without destroying industry, which is inconceivable, such method could be only temporary, as the source of income would constantly diminish, and meanwhile the incentive to create new wealth would be destroyed. The consumer must pay taxes ultimately, no matter how circuitous the route, but the method of levying and collecting may seriously impair business and cause further unemployment.

Thirty Million New Voters

Thirty million new voters have arrived at the voting age since the World War. They had no part in the war and no voice in connection with the abuses in the Veterans' Compensation situation. These thirty million voters are having brought to their attention now for the first time the abuses that have been grafted into the Veterans Compensation laws. They now begin to realize that they are the ones who will have to pay the bill ultimately. Our self-seeking politicians who are engaged in courting and exploiting the veterans' vote by advocating unsound and destructive legislation will have a rude awakening when these thirty million new voters understand the truth.

Here is a challenge to 96 per cent of the population of the country. Are business and industry going to submit to the growing burdens of Federal taxation, now confiscatory in character in some brackets, and inordinately high in

COST SECTION

[1] Chairman, Banking and Industrial Committee of New England.

others? Are business and industry going to pay 13¾ per cent corporation tax, 8 per cent normal tax, and up to 55 per cent surtax, a total possible burden of as high as 76¾ per cent, leaving in some cases only 24¼ per cent of the business profits for the risk and effort, with the understanding that 25 per cent of these tax payments are for veterans, and 12½ per cent for veterans who never suffered any disability or injury as a result of the war—many of whom never even saw Europe—and many of whom are at the same time drawing full-time pay as able-bodied men from the Government, its political subdivisions, and from industry?

The Country Needs Leaders

We are indeed confronted with a grave situation. Three years of declining prices and drastic shrinkages in commodities, security and real estate values have struck at the very foundations of our economic structure and institutions. Yet during this entire period no one man, nor has any group of men, stood out as constructive leaders, either in the halls of Congress or elsewhere. Nor has any man or group yet fathomed the situation, its significance and ultimate consequences.

Our legislators at Washington have not shown any comprehension of the situation or its necessities. Their efforts at constructive legislation have been dilatory, unsound and pathetically inefficient. The most fantastic remedies have been suggested, including bond issues running into billions at a time when the Government's income was insufficient by more than $1,500,000,000 annually to meet its expenses.

Is It Too Late?

Is it too late for us to save the situation and restore confidence in this country? No, it is not—emphatically No, provided we have the same intelligent administration of our public affairs that any prudent man would use in business. We can regard with equanimity the reduction or cancellation of all debts owed to us by foreign governments, and still save the situation.

There is only one factor that can ever force the United States off a gold basis, and that is the action of our own people. If the attitude of our law-makers and politicians continues to be such as to destroy confidence, and hoarding is resumed on any large scale, then we will either place an embargo on gold or go off the gold basis.

The responsibility rests squarely upon our representatives in Washington and in our State legislatures, if they continue their unsound and wasteful appropriations and expenditures. If they fail to insist upon economies and sound legislation and fair and proper tax laws, then confidence will be destroyed, further heavy gold withdrawals and hoarding will be resumed, with the ultimate effect upon our gold standard.

If our representatives in Washington use even ordinary business intelligence, this can be averted, with the balancing of the budget, unless the bonus bill or other unsound legislation is passed, which I seriously doubt.

Results Achieved in England

One of the controlling reasons for believing that it is not too late to save the situation in the U. S. is the result achieved in England under financial conditions vastly more difficult than those with which we are now confronted. England's national expenditures had led the country into a situation where the internal debt was ten times the annual public revenue and one and one-half times her national income. When the people of England awoke to their perilous situation they installed a new government committed to most drastic economies, including reduction of the dole and cutting the wages of the civil service list. While England was forced off the gold basis, a major crisis and collapse of their economic institutions was prevented and they have apparently saved the situation under most difficult circumstances.

Now we can face our difficulties under much more favorable financial conditions, regardless of our reckless extravagance. Our total national debt is now not more than two and one-half times our national revenue, and is not more than our national income, figuring that income on the 1913 basis of thirty-four billion dollars. If our national income can be brought back to even the 1930 basis, it will amount to twice our national debt. In these facts lies the strongest reason for believing that we still have left a margin of safety sufficient to carry us over the reconstruction period, provided our public officials and representatives show ordinary intelligence in reducing expenditures and appropriations, keeping the budget balanced, reducing taxation at the earliest possible moment, and passing only sound and necessary legislation.

The responsibility for seeing that these things are done rests squarely upon the people, and the extent to which they will make themselves articulate in public affairs and in politics.

Fatally Scalded at Cedarville

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, August 8, 1932.—William Shoemaker, 36 years old, was scalded to death August 4 when his unconscious form was carried on a conveyor and dumped into a large vat of boiling lye and acid at the plant of the Hagar Strawboard and Paper Company, at Cedarville, east of this city, where he was employed in the baling department.

It was Shoemaker's job to cut the wire on large bales of straw, which are conveyed on conveyors to the cooking vats, for the first process in papermaking. In some manner it is believed he was struck by a bale of straw and rendered unconscious, his body falling on the conveyor with the straw. The first intimation that something was wrong came when Raymond Littler, working near the vats and whose job it was to push the straw into the vats, noticed that bales of straw were coming along the conveyor with the wire uncut.

Because there was a large amount of steam in the room from the vats, the fluid in which is kept at 240-degree temperature, Littler did not notice the absence of Shoemaker.

Investigation revealed his body in the vat. It had been there for approximately ten minutes when found. Death is believed to have been instantaneous.

Shoemaker, a veteran of the World War, had been employed in the Cedarville plant since 1923.

Funeral services were conducted Saturday from his late home in Cedarville. Fellow-employees served as pallbearers and employees of the plant attended the rites in a body, the mill having been closed for the obsequies.

St. Regis Plants More Active

DEFERIET, N. Y., August 8, 1932.—An improvement in conditions is noted in a few of the branch plants operated by the St. Regis Paper Company in this section. The local division resumed operations this week after being shut down for the past two weeks and it was announced that a schedule of four or five days a week would be observed. It was also stated that sufficient orders are on hand to insure operations until early in the fall. The company expects by that time to have received further orders which will permit steady work for the remainder of the year at least.

Modernization of the Hollander Beater

By A. A. Bush[1]

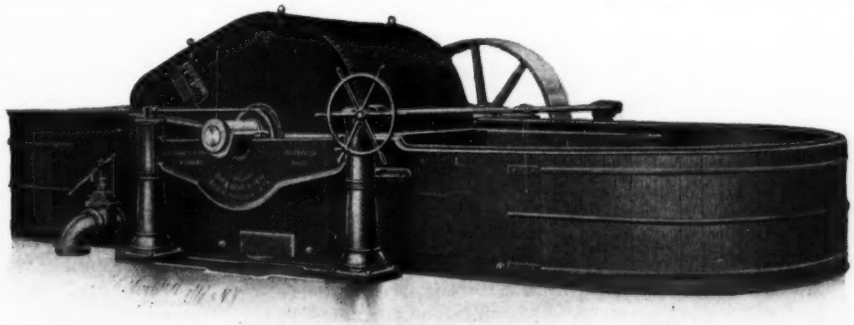
Beater manufacturers, during the past few years of our rapid industrial expansion, have been studying every known old and new method of beating, with hopes of improving on the general idea which is incorporated in the original Hollander beater. This basic principle of the Hollander beater has been in almost exclusive use for paper stock preparation since 1750. It is therefore natural that so much effort has been aimed toward the development of some other method of stock preparation, since it is known from a mechanical point of view that for the actual work accomplished, the Hollander beater is undoubtedly the most inefficient of mechanical machines when compared to the efficiency ratio of other mechanical appliances in other fields. This fact has been established because of the time it takes to prepare the stock due to slow and long travel the stock must make around the beater tube to receive the very short roll and bed plate action. Therefore because of this known mechanical inefficiency many other machines have been developed in an attempt to replace the Hollander beater, but after they have been thoroughly tried and tested by paper makers throughout the world, it is now almost their unanimous opinion that the principles used in the Hollander are still the most efficient and cannot be duplicated by any new device in obtaining the desired results needed in manufacturing good paper. It therefore resolves itself to the fact that the Hollander even though considered inefficient as a mechanical appliance must remain to the paper maker still the most efficient mechanical means he has of preparing his stock correctly.

Even though there has been no change from the Hollander principle of beating, there have been many changes in the beater itself that have greatly improved its method of operation, etc. over the early beater as regards faster circulation, higher capacities, better stock, lower horsepower, easier operation, longer life, better materials, and lower maintenance cost.

[1] Vice-president, E. D. Jones & Sons Company, Pittsfield, Mass. (TAPPI Contributing Member)

History of the Beater

The Hollander beater in its early stages of use in the United States, was of crude construction, consisting of tub, rolls and lighter. The tub was similar in shape as that in use today. The size of the roll was governed by the size of a log that could be obtained. This log was grooved to receive the bars and was very light so that fine roll adjustment was not necessary as the roll could be allowed to ride on the stock without damage to the fibers.

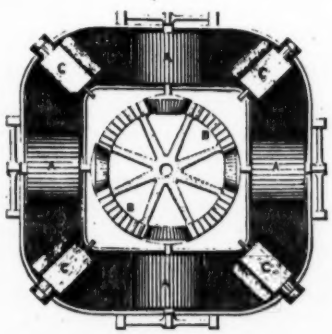


Wood Tub Beating Engine 30 Years Ago

The trend at that time was to have small diameter roll with large face as the size of log governed diameter while the manufacturer could control size of face.

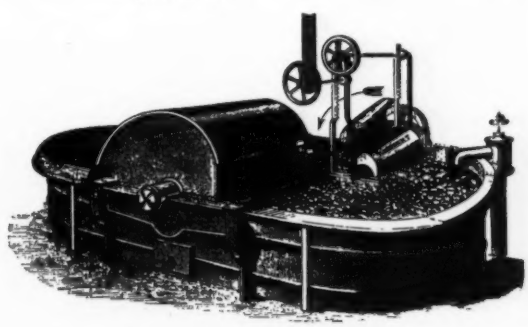
The stock at that period was all rag and a great deal of hand stirring was necessary as beater circulation was very poor.

Next came a period when rolls were made of iron and although even these were light as compared with rolls of today, some attention was paid to the diameter and length of the bar and the diameters were increased somewhat over previous beaters. This increased diameter allowed the swinging of the roll nearer the bottom of the tub and



Beating Engine 70 Years Ago

An engine with four rolls, operated in a Connecticut mill about 70 years ago. The engine formed the four sides of a hollow square, with a roll A on each side, driven by a common wheel B in the centre. A washing cylinder C was placed in every corner. It only differed from four separate engines by not having a midfellow and by the flow of the pulp directly from one roll to another.



Beating Engine 60 Years Ago

Pulp Propeller type—it consisted of two cast flanges, to which four curved brass wings or arms were fastened by means of countersunk screws. If any one of the arms broke, a new one could easily be put in its place, by simply turning out the screws and resetting them with the new arm. Arrow indicates the motion of the pulp propeller. Inventor claimed this as first fully mechanically driven beater.

accordingly developed some improvement in circulation. During both these periods, adjustment of the roll was from one end only, but sometime during the latter period of adjustment, double lighters were brought into play for the purpose of adjusting the roll at both ends. This was accomplished by bevel gears and attachments under the tub for raising and lowering the roll at each end.

The next move was a demand for larger diameter rolls, and with the advent of wood pulps, quicker operation and faster machine speeds, necessitated getting the stock from the beaters in shorter time. These rolls swung clear to the bottom of the tub, giving quite an increase in the travel of the stock in shorter beating time. The large diameter roll created heavier rolls which needed finer adjustment in order to prevent cutting of the fibers. For a number of years this beater was considered a very efficient beating machine.

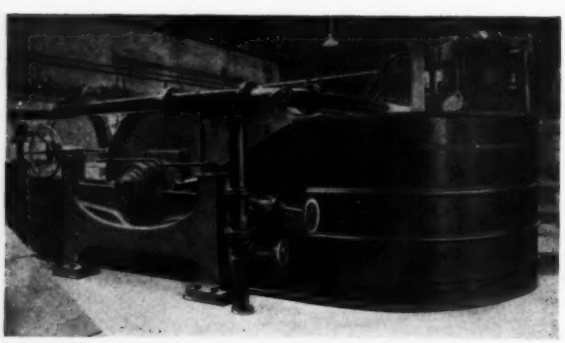
It was a few years after this period that it became very apparent that the relative position of the backfall to the roll as well as its height, and also the design of the curb had a great bearing on the power consumption and on the circulation of the stock. With these important details to be worked out, it was realized that to competently handle the problem and get just the correct change, that it would be necessary to construct a beater of commercial size for experimentation.

The next few years were spent in studying the results of tests by changes made in position of the backfall relative to the roll; height of backfall; different curb styles; types of bed plates and their relative position to the roll; lighter change for fine roll adjustments to bed plates and tackle best adapted for different grades of paper to be produced, so that we might best see where we obtained the greatest efficiency as regarded stock circulation, horsepower consumption, capacity, action on stock, operating ease and lower initial cost, as well as maintenance cost.

However, even with all this experimentation, we realized the necessity for continual research and are still carrying on similar tests to bring about more practical developments in beater performance.

The result of this intensive laboratory and field work is our present High-Speed, Semi-High-Speed, and Standard Beaters.

These modern beaters are equipped with a very improved roll, either a bandless or banded type, with patented pin type bar. This construction prevents the bars from raising in the center, due to the swellage of wood fillings between the bars.



PRESENT HIGH-SPEED JONES BEATER, TIMKEN EQUIPPED

Equipped with very improved roll-banded or bandless type—patented pin type bar. Construction prevents bar raising in center due to swellage wood fillings between bars. Has improved curb with deflector and protector plates; doctors; metal plates set into side of tub; heavy backfall plate; metal protected parts; quick dumping devices; improved cylinder washers, and other outstanding improvements.

The trend in roll manufacture again appears to favor the early method of small diameter and large face and a very heavy roll. This is due to the change in the character of stock which is produced today.

Other features of our modern beaters are: improved curb with its deflector and protector plates; its doctors, its metal plates set into the side of the tub; a heavy backfall plate used to maintain by proper curvature an exact distance between roll and backfall; heavy construction of tub with all extreme wearing parts protected by metal; quick-dumping device of either the oblong or round valves, outside operated; the water device in the backfall to assist in quickly dumping the beater without the use of rakes, the improved cylinder washers for either washing stock or thickening the stock by means of taking the water out, and highly efficient and heavily constructed lighters which give perfect adjustment of the roll to its bed plates with dials and pointers to assist the operator in the adjustment of the roll, are only a few important of the many improvements and the reasons why our present beater is the most efficient beating apparatus that is known to the trade today.

How the more efficient beater lowers production cost is cited by the following figures as shown in one mill: Power consumption per year in old equipment 6,244,992 h.p. hours versus power consumption per year in new Jones equipment 2,695,680 h.p. hours equals 3,549,312 h.p. hours saved in one year. Assuming that a mill cannot produce or buy a h.p. hour for less than 1½ cents, the savings per year is 3,549,312 h.p. hours x 1½c or $44,366.00. Comparing these savings with the most of the new equipment complete shows that the latter pays for itself within one year. And not only is there a great improvement in the stock but there is an additional saving over the cost of the new equipment of 12 per cent on the investment. This, of course, is an outstanding example. It attests to the importance of replacing obsolete beaters by the modern type Hollanders. A general survey in this country, of beating equipment shows that a great percentage of mills are able to make substantial savings in the operating cost by giving careful study and consideration to one of the more important departments of a paper mill—that is the Beater Room.

Hercules Station Centralizes

The centralization of all divisions of Hercules experiment and research at the new Experiment Station, near Wilmington, is announced by Hercules Powder Company. The changes will bring all experiment activities in closer touch with the company's main offices and will enable more complete contact with industries using Hercules products, it is stated by Harry E. Kaiser, director of the Hercules Experiment Station.

The Kenvil, N. J., branch of the Experiment Station will cease to function as a separate organization and the Kenvil facilities will be taken over by the company's Explosives Department and placed under the jurisdiction of the adjacent Kenvil plant.

With the completion of the reorganization, all general research will be centered at Wilmington and all development work of an operating or sales nature will be carried on at the plants making the product involved. The new Hercules Experiment Station, which was completed and put in operation last year, is located on a 300-acre tract of land about five miles west of Wilmington.

The continued expansion of Hercules Powder Company in the chemical field has led to the development of a sizable creative and technical staff which the present reorganization places at points of maximum service, states Mr. Kaiser.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING AUGUST 6, 1932

CIGARETTE PAPER

De Manduit Paper Corp., Lafayette, Havre, 100 cs.; Standard Products Corp., Lafayette, Havre, 33 cs.; American Tobacco Co., Lafayette, Havre, 250 cs.

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Whiting & Patterson Co. Inc., Aquitania, Southampton, 1 cs.

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W. H. Bell, Markland, Liverpool, N. S., 3426 rolls; Jay Madden Corp., Gen. von Steuben, Bremen, 410 rolls; Parsons & Whittemore, Inc., Veendam, Rotterdam, 175 rolls; ——, Bergensfjord, Oslo, 613 rolls; Lunham & Reeve, Scanyork, Helsingfors, 248 rolls.

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Burroughs Wellcome & Co., Franconia, London, 3 cs.; R. Wilson Paper Co., Caledonia, Glasgow, 5 cs.; ——, Albert Ballin, Hamburg, 26 cs.; E. Dietzgen & Co., Albert Ballin, Hamburg, 4cs.

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Wedeman Godknecht & Lally, Albert Ballin, Hamburg, 3 cs.

STRAW BOARD

Hensel Bruckman & Lorbacher, Veendam, Rotterdam, 80 bls.

MISCELLANEOUS PAPER

——, American Merchant, London, 3 cs.; D. F. Young, Gen. von Steuben, Bremen, 5 cs.; Corn Exchange Bank, Tai Yang, Kobe, 13 cs.; C. L. Voorhees, Tai Yang, Yokohama, 5 cs.; H. Reeve Angel & Co. Inc., Tai Yang Yokohama, 4 cs.; Old Town Ribbon & Carbon Co., Estrella, Marseilles, 8 cs.; ——, Estrella, Marseilles, 3 cs.; F. Grumbacher, Lafayette, Havre, 33 bls.; Coty Process-

ing Co., Lafayette, Havre, 20 cs.; Keuffel & Esser Co., Albert Ballin, Hamburg, 1 cs.

RAGS, BAGGINGS, ETC.

——, Franconia, London, 192 bls. rags; National City Bank, Gen. von Steuben, Bremen, 29 bls. rags; J. Damato, Lafayette, Havre, 112 bls. rags; M. Snedeker Corp., Cold Harbor, Belfast, 146 bls. paper stock; ——, American Shipper, Hamburg, 3 bls. rags; Schencker & Co., Albert Ballin, Hamburg, 32 bags old paper.

HIDE GLUE

H. Bierschenk Co. Inc., Veendam, Rotterdam, 200 bags; ——, Albert Ballin, Hamburg, 200 bags.

OLD ROPE

——, American Shipper, Hamburg, 57 coils.

WOOD FLOUR

——, Bergensfjord, Frederickstad, 355 bags.

WOOD PULP

A. Giese & Son, Veendam, Rotterdam, 40 bls. wood pulp; E. M. Sergeant & Co., Bergensfjord, Oslo, 600 bls. chemical pulp; ——, Bergensfjord, Oslo, 500 bls. chemical pulp; Chemical Bank & Trust Co., Bergensfjord, Oslo, 325 bls. wood pulp; Irving Trust Co., Bergensfjord, Drammen, 200 bls. sulphite; ——, Bergensfjord, Drammen, 125 bls. sulphite; Lagerloef Trading Co., Scanyork, Helsingfors, 760 bls. sulphite, 126 tons; N. Y. Trust Co., American Shipper, Hamburg, 500 bls. sulphite, 101 tons; Castle & Overton, Inc., Albert Ballin, Hamburg, 1,265 bls. wood pulp, 248 tons; E. J. Keller Co., Inc., Harburg, ——, 388 bls. wood pulp; Gottesman & Co. Inc., Lagaholm, Sweden, 600 bls. wood pulp.

PULPWOOD

West Virginia Pulp & Paper Co., Atna, St. Peters, 1,432 cords.

BOSTON IMPORTS

WEEK ENDING AUGUST 6, 1932

D. C. Andrews & Co., Laconia, Liverpool 22 cs. waxed paper; G. F. Malcolmn, Inc., Laconia, Liverpool, 2 cs. gauze tissue; Gottesman & Co. Inc., Lagaholm, Sweden, 2,400 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING AUGUST 6, 1932

Gottesman & Co. Inc., Vasaholm, Sweden, 5,400 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING AUGUST 6, 1932

Gottesman & Co. Inc., Lagaholm, Sweden, 4,050 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 6, 1932

J. Andersen & Co., Ida, Trieste, 270 bls. wood pulp; Lagerloef Trading Co., Scanyork, Helsingfors, 520 bls. mechanical pulp; E. J. Keller Co. Inc., Veendam, ——, 72 coils old rope; E. J. Keller Co. Inc., Statendam, —, 29 bls. rags; E. J. Keller Co., Inc., Statendam, —, 35 bls. rope waste.

NEW ORLEANS IMPORTS

WEEK ENDING AUGUST 6, 1932

Parsons & Whittemore, Inc., Svaneholm, ——, 210 bls. sulphite.

WILMINGTON IMPORTS

WEEK ENDING AUGUST 6, 1932

Price & Pierce, Ltd., Scanyork, Ohrviken, 12,000 bls. chemical pulp, 2,032 tons.

MONTREAL IMPORTS

WEEK ENDING AUGUST 6, 1932

Gottesman & Co. Inc., Korsholm, Sweden, 5,000 bls. wood pulp.

Fraser Companies' Reorganization

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 8, 1932.—At a meeting of the three-year noteholders of the Fraser Companies, held here, the reorganization plan was accepted, with a number of revisions. The common stockholders will receive one new share for each twenty held, instead of for each ten, as originally proposed.

Other amendments to the original plan are:

Additional first mortgage bonds cannot be issued unless interest has been earned twice over instead of 1½ times.

Prior lien bonds on the Restigouche Company cannot be issued in excess of $500,000 instead of the original plan's amount of $1,000,000.

Controlling interests of the Fraser Companies will not be allowed to divorce the Restigouche Company at any time they see fit. The latter must continue to form a part of the former until June 1, 1935 and then the Fraser Companies can only be released from their guarantee of Restigouche bonds by giving three months notice.

A voting trust was also named for the Restigouche Company. The sponsors of the plan named three members, the Toronto group one and the Montreal group one. Those named were: Hon Gordon W. Scott, S. Kilpatrick and Harold Crabtree for the sponsors, and Hamilton Cassels and Arthur Jones for the protective group.

Taylor & Co. to Build Plant

Taylor & Co. Inc., with headquarters in the Provident Trust Building, Philadelphia, are starting this month at Metzwood, near Norristown, Pa., the construction of a new plant for the manufacture of vulcanized fiber and also laminated badelite or synthetic resin products.

The first unit will consist of a building about 700 ft. by 100 ft., equipped with most modern machinery, most of which is special.

The products to be manufactured are largely used in the electrical and mechanical trades, also trunk and case manufacture, building trade and furniture manufacture. Silent timing gears are used in most motor cars.

The initial investment in this enterprise will be approximately $500,000.

Gordon Blanchard Leaves Eaton Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

ADAMS, Mass., August 9, 1932.—Gordon Blanchard, of Scarsdale, N. Y., sales manager for the Eaton Paper Company, has resigned his position. He was formerly sales manager of the Crocker-McElwain Company of this city. He left Holyoke about two years ago.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, August 10, 1932.

Sentiment in the local paper market is improving. While demand for the various standard grades of paper continues light there are more inquiries around, some of which may materialize into good orders. Sales forces of the leading paper organizations are looking forward to the Fall campaign with confidence. Prices remain unchanged, in most instances.

The news print market is only moderately active. Production in United States, Canadian and Newfoundland mills is proceeding in sufficient volume to take care of current requirements. Supplies are moving into consumption in fairly good volume for the time of year. Prices are generally holding to formerly quoted levels.

Interest in the various grades of paper board is more in evidence than of late and a slight upturn is anticipated in the near future. The fine paper market continues to exhibit a strong undertone. Tissues are going forward at a steady pace. The coarse paper market is irregular and kraft wrapping paper prices are softer than for some time past.

Mechanical Pulp

Steadiness prevails in the ground wood market. Although the prevailing demand is below normal for the season offerings are limited, as production both at home and abroad has practically been keyed to consumption. Accumulations are not excessive and the statistical position of the industry is sound. Prices generally remain unchanged.

Chemical Pulp

Demand for the various grades of chemical pulp is better, and a satisfactory number of inquiries for future needs are around. The pulp mill workers strike in Sweden continues and is, to some extent, responsible for the steady condition of the market of late. Prices are holding to schedule, without difficulty, despite keen competition.

Old Rope and Bagging

The old rope market is practically marking time. Very little interest is being displayed at present by the paper mills in either domestic or imported manila rope. Small mixed rope is only moving slowly. The bagging market continues irregular. Roofing bagging is in seasonal request and gunny is arousing more interest. Scrap bagging is dull.

Rags

Some improvement was noticed in the domestic rag market during the past week. Inquiries for cotton cuttings were more numerous although transactions were scarce. Roofing stock is showing some seasonal activity. Domestic rag prices are strictly nominal. The position of the foreign rag market is unchanged and the effects of the foreign exchange situation are still being felt.

Waste Paper

Trading in the paper stock market during the past week was along routine lines. The better grades were decidedly steadier. Offerings of soft white shavings are scarce and prices somewhat firmer. Book stock is in better request. Interest in ledger stock is also more in evidence. Board mill demand for the lower grades of paper stock is more encouraging.

Twine

The local twine market is only moderately active. There are signs, however, of an improvement in general business conditions and the twine industry should benefit accordingly. At the present time, demand for the various grades is mostly along routine lines. While competition for desirable orders is as keen as ever, prices are holding up fairly well.

Donnacona Plan Approved

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 8, 1932.—Approval of the reorganization plan for the Donnacona Paper Company has been given by the first mortgage bond holders. Of the total of $6,584,000 of bonds outstanding, $3,370,000 were represented at the meeting, and $3,262,000 voted in favor of the scheme.

Under the plan interest payments in the next two years are waived, and for the two subsequent years will be paid only if earned. Provision is also made for the waiving of sinking funds due this year and in the three years following.

In consideration for foregoing certain of their rights, the first mortgage bondholders receive control of the company until stipulated conditions have been fulfilled. They receive 121,804 shares of class "A" common stock at the rate of 18½ shares for each $1,000 principal amount of bonds held. There are, in addition, 123,088 of class "B" shares of common stock. Voting control rests with the former stock as long as various covenants have not been fulfilled by the company.

The new board of directors will number seven. Names of the members are to be submitted to the bondholders for approval.

Donnacona debenture holders have yet to meet and approve the plan which provides that they receive two shares of class "B" stock for each $100 of principal amount held.

The common stockholders receive one new share for each ten held.

Iroquois Mills Reopen

[FROM OUR REGULAR CORRESPONDENT]

THOMSON, N. Y., August 8, 1932.—The mills of the Iroquois Pulp & Paper Co., reopened this week after a shutdown and it was indicated that an improved volume of orders would permit steady operations. A large portion of the force has been recalled. The plant is regarded as the chief source of employment for residents of the village.

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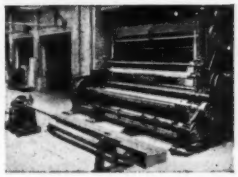

SAMUEL M. LANGSTON CO.
Camden, New Jersey

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, August 10, 1932.

BLANC FIXE.—Conditions in the blanc fixe market are fairly satisfactory. Prices are holding to schedule. The pulp is quoted at from $42.00 to $45.00 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Prices continue steady and unaltered. The contract movement is seasonal. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market continues quiet. Domestic standard ground is quoted at 4¾ cents and finely ground at 6 cents per pound. Argentine standard ground is selling at 8 cents and finely ground at 8½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly persistent. Prices are generally holding to schedule. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is moderately active. Shipments against contract are moving slowly. Imported china clay is quoted at from $10 to $15 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Some improvement was noticed in the chlorine market. Demand from the paper mills is slightly more active. Prices are holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is steadier. Grades of gum rosin used in the paper mills are still quoted at from $3.30 to $3.45 per 280 pounds, in barrels, at works; wood rosin is selling at $2.50 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Supplies of salt cake are going forward to the paper mills in fairly good volume. Salt cake is still quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works. Imported salt cake is selling at from $14 to $15 per ton, ship side.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Shipments against contract are moving at a steady pace. Quotations on soda ash, in car lots, at works, per 100 pounds, are still as follows: in bulk, $1.00; in bags, $1.25; and in barrels, $1.38.

STARCH.—Most of the business transacted in the starch market during the past week was along routine lines. Prices remain unchanged. Special paper making starch is quoted at $2.44 per 100 pounds, in bags; and at $2.71 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Steadiness prevails in the sulphate of alumina market. Prices are holding to formerly quoted levels. Commercial grades are selling at from $1.25 to $1.40; while iron free is offered at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Trading in the talc market is fairly active for the time of year. Contract shipments are well maintained. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at mine; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	38.00
Bonds	5.00	@	53.25
Index	6.00	@	12.00
Writings—			
Extra Superfine	6.50	@	15.00
Superfine	6.25	@	14.75
Tub sized	4.50	@	7.00
Engine sized	4.00	@	5.00
Book, Cased—			
S. & S. C.	5.25	@	—
M. F.	3.75	@	5.00
Coated and Enamel	6.25	@	9.75
Lithograph	6.75	@	11.25
Tissues—Per Ream—			
White No. 1	.65	@	.70
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
White No. 2	.50	@	.60
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middies	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Roll, contract	53.00	@	—
Rolls, spot	53.00	@	—
Sheets	58.00	@	—
Side Runs	38.00	@	42.00
Kraft—			
No. 1 Domestic	4.75	@	6.00
No. 2 Domestic	2.62½	@	—
Southern	2.62½	@	—
Imported	3.50	@	4.30
Boards—per ton—			
News	22.50	@	25.00
Straw	34.50	@	45.00
Chip	22.50	@	25.00
Binders' Boards	62.00	@	70.00
Standard 85 Test Liner	26.00	@	28.00
Sgl. Mla. Lt. Chip	35.00	@	37.50

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	19.00	@	21.00
Dry	21.00	@	22.00

(F. o. b. Mill)

No. 1 Domestic	18.00	@	24.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.10	@	2.90
Easy Bleaching	1.60	@	1.75
No. 1 strong unbleached	1.40	@	1.60
Mitscherlich unbleached	1.60	@	1.75
No. 2 strong unbleached	1.25	@	1.35
No. 1 Kraft	1.50	@	1.65
No. 2 Kraft	1.35	@	1.40
Sulphate—			
Bleached	1.85	@	2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	2.10	@	3.75
Easy Bleaching	1.75	@	1.90
News	1.50	@	1.65
Mitscherlich	2.40	@	2.55
Kraft (Domestic)	1.50	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.25	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	4.00	@	4.25
New White, No. 2	3.00	@	3.25
Silesias No. 1	3.75	@	4.00
New Unbleached	5.50	@	6.00
New Soft Blacks	2.75	@	3.00
Blue Overall	3.00	@	3.50
Fancy	1.50	@	1.75
Washables	1.15	@	1.40
Mixed Khaki Cuttings	2.50	@	3.00
Pink Corset Cuttings	2.75	@	3.25
O. D. Khaki Cuttings	3.00	@	3.25
Men's Corduroy	1.00	@	1.25
New Mixed Blacks	2.25	@	2.50

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White, No. 2—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.00	@	1.25
Black Stockings	2.00	@	2.25
Roofing Rags—			
No. 1	.53	@	.58
No. 2	.48	@	.53
No. 3	.43	@	.48
No. 4	.38	@	.43
No. 5A	.33	@	.38

Foreign Rags

New Rags

New Dark Cuttings	1.40	@	1.50
New Mixed Cuttings	1.60	@	1.75
New Light Silesias	3.40	@	3.50
Light Flannelettes	3.25	@	3.50
Unbleached Cuttings	5.50	@	6.00
New White Cuttings	4.25	@	4.50
New Light Oxfords	3.75	@	4.00
New Light Prints	2.00	@	2.25

Old Rags

No. 1 White Linens	5.25	@	5.50
No. 2 White Linens	4.50	@	4.75
No. 3 White Linens	3.25	@	3.75
No. 4 White Linens	1.75	@	2.25
No. 1 White Cotton	4.00	@	4.25
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.25	@	2.50
No. 4 White Cotton	1.40	@	1.50
Extra Light Prints	1.90	@	2.10
Ord. Light Prints	1.60	@	1.75
Med. Light Prints	1.40	@	1.55
Dutch Blue Cottons	1.35	@	1.40
French Blue Linens	1.80	@	1.90
German Blue Linens	1.70	@	1.80
German Blue Cottons	1.20	@	1.25
Checks and Blues	1.25	@	1.30
Lindsay Garments	.75	@	.80
Dark Cottons	.70	@	.75
Old Shopperies	.55	@	.60
New Shopperies	.60	@	.65
French Blues	1.25	@	1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.00	@	1.10
Domestic	1.15	@	1.25
Wool Tares, light	.80	@	.85
Wool Tares, heavy	.80	@	.85
Bright Bagging	.75	@	.80
Small Mixed Rope	.80	@	.90
Manila Rope—			
Foreign	1.50	@	1.60
Domestic	1.50	@	1.75
New Burlap Cut	1.65	@	1.75
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	1.60	@	1.70
Ordinary Hard White No. 1	1.30	@	1.40
Hard White No. 2	1.25	@	1.30
Soft White No. 1	1.25	@	1.35
Flat Stock—			
Stitchless	.50	@	.60
Overissue Mag	.50	@	.60
Solid Flat Book	.45	@	.50
Crumpled No. 1	.35	@	.40
Solid Book Ledger	1.50	@	1.75
Ledger Stock	.45	@	.55
New B. B. Chips	.20	@	.25
Manilas—			
New Env. Cut	1.25	@	1.35
New Cuttings	1.00	@	1.05
Extra No. 1 old	.80	@	.90
Print	.35	@	.40
Bogus Wrapper	.30	@	.35
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	.60	@	.70
News—			
No. 1 White News	1.15	@	1.20
Strictly Overissue	.35	@	.40
Strictly Folded	.23	@	.28
No. 1 Mixed Paper	.15	@	.20

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Appleton Woolen Mills,
Appleton, Wisconsin

Appleton
Felts and Jackets

PAPER TRADE JOURNAL
ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

SIXTY FIRST YEAR

Published Every Thursday by the
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